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THE

WESTERN JOURNAL

and Civilian.

VOL. XIII. December, 1854. No. I.

ARTICLE I.

Commercial and Financial Aspects.

IN recurring to this subject at the present time, we experience an unusual degree of distrust in our ability to arrive at just and sound conclusions touching the business prospects of the current and ensuing year.

In this country especially, the subject of commerce and finance becomes from year to year more complicated and difficult to comprehend. For new enterprises in works of public improvement, mining and manufacturing; discoveries and improvements in physical science which bring into use new agents of production and exchange; the continually augmenting current of emigration, and the settlement of new territories; the increase of banks and banking operations; the rapid growth of cities; the advancing price of real estate, and increasing growth of foreign and domestic commerce, produce changes and new relations which escape the observation and baffle the judgement of the most attentive and astute observers.

Though this state of things may be justly regarded as denoting a rapid development of our national resources, yet it must be admitted, by the enlightened economist, that the increase of wealth in the United States is greatly overrated. The augmentation of wealth for some years past, has been estimated by a new method of calculation which gives the nominal, but not the real amount of increase. The enlargement of the volume of wealth consists of accumulations to the stock of useful commodities; the terms used to denote this enlargement are derived from an artificial and fallacious system of finance. Owing to the vacillating nature of this system, property which was valued at five thousand dollars two

years ago, may now be rated at ten thousand dollars; and two years hence it may fall even below the first estimate, though its productiveness and capacity to supply the wants of the owner may have remained the same during the entire period. In such a case, supposing the prices of property throughout the community to be affected by the same causes, the proprietor would be neither richer nor poorer, by reason of the fluctuations in the nominal value of his estate, provided he should confine his operations to the legitimate business of producing and exchanging his commodities at the current market rates. But in this country there are so many inducements stimulating individuals to acquire property on credit, that neither legislation nor experience can restrain them from overtrading and speculation. And it seems that when a spirit of speculation is once excited, it can be checked only by a financial revulsion.

It is the nature of commerce to expand to the utmost limit of the demand for its commodities, and even to go beyond until checked by an over-stocked market. But the legitimate operations of commerce rarely, and perhaps never, produce a general revulsion in the business of an entire country. For so long as commerce is confined to the exchange of commodities which are required for daily use and consumption, its operations will be modified by the wants of the consumers, and restrained by their ability to purchase and pay.

It is the traffic in commodities not strictly commercial which disturbs the financial condition of a country, and endangers the pursuit of commerce. Projects of public improvement and speculations in real estate, in connection with excessive banking, have been the disturbing elements of commerce for some years past, and all classes of the community are now deeply interested in the question whether the deranged state of trade and finance can be restored to a healthy condition without a severe, general revulsion.

In attempting to answer this inquiry, we shall in the first place look to the state of the mercantile account between this and foreign countries. We have not yet seen the officiel statement of imports and exports for the fiscal year ending 30th June, 1854; but taking the trade of New York as a fair criterion, we conclude that though there has been a large increase in the amount of imports, the exports, including specie, have probably exceeded the imports by $15,000,000. This is to be regarded as a very important im-

provement upon the business of the preceding year when the imports, including specie, were $37,002,490 more than the exports.

The history of the last five years, when the facts are fully considered, will show that the contest for capital which had been carried on for several years between the railroads and commerce, reached a crisis about the commencement of the year 1853; and though the former were compelled to yield to the overruling influence of the latter, yet both railroads and commerce were involved in embarrassments from which they have not yet recovered.

In a volume prepared by Mr. Andrews, and communicated by the Secretary of the Treasury to the Senate, on the 25th of Aug., 1852, it is stated that at least $80,000,000 was then annually required to carry forward works in progress, and to meet the demand of new ones. Of this sum, he says, "$50,000,000 are borrowed either of capitalists of this country or Europe." It is evident that this amount could not be drawn from its ordinary employment as the basis or agent of commerce without embarrassing its operations. But after all, there is perhaps no important branch of industry that has not been benefitted by the prosecution of our public works: commerce has received a wholesome check; and instead of being allowed to absorb the entire produce of the California mines, we have built some 8,000 miles of railroad since 1849. The railroad interest has suffered more than any other; but no one should feel disappointed, for every intelligent individual must have foreseen the result: it was not in the nature of things that such a vast amount of public work could be carried on successfully at the same time.

It was doubtless expected that railroad bonds and stocks would constitute a basis for commercial operations and, in a good degree, supply the place of the money withdrawn from the ordinary channels of trade. This was a plausible view of the subject, and in some measure true, but unfortunately the production of these commodities far exceeded the demand, and being subject to a rule of public economy to which there is perhaps no exception, they declined in price and became unsaleable, except upon terms ruinous to the holders. This was the weak point in the financial system of the times, and it is now the most difficult to overcome.

According to a report of the Secretary of the Treasury, in answer to a resolution of the Senate calling for the amount of American securities held in Europe and other foreign countries, on the

30th June, 1853, the bonds and stocks of the United States, individual States, counties and corporations, amounted to $1,362,752,596. The railroad bonds outstanding, and stocks paid in, according to this report, amounted to $480,005,519. We are not informed by the report whether the State and county bonds created in aid of railroads are included in this sum, but from the items which compose the general summary, we conclude that they are not included. We append the summary statement made by the Secretary of the Treasury for the inspection of the reader.*

It will be seen by reference to this statement that bonds and stocks to the amount of $1,178,567,882 are held in the United States: a sum at least four times as large as the whole amount of money, gold and silver, in the country. It is therefore a fair conclusion that much the greater portion of these securities was taken in the first instance by dealers who purchased them not as objects of permanent investment, but of speculation. If the owners are able to hold them, the financial condition of the country may be regarded as quite safe; but no proposition appears more clear to us than that, if a considerable portion of these securities should be forced upon the market within the next twelve months, enormous sacrifices, and perhaps a greater stringency in the money market will follow as necessary consequences. No matter how solvent the makers of the bonds, nor how large in reason the dividends on

* GENERAL SUMMARY, JUNE 30, 1853.

	Total.	Held by foreigners.
United States stocks	$58,205,517	$27,000,000
State stocks	190,718,221	72,931,507
113 cities and towns [bonds]	79,352,149	16,462,322
347 counties [bonds]	13,928,369	5,000,000
985 banks [stocks]	266,724,955	6,688,996
75 insurance companies [stocks]	12,829,730	378,172
244 railroad companies [stocks]	309,893,967	8,244,025
Do. Do. [bonds]	170,111,552	43,885,752
16 canal and navigation companies [stocks]	35,888,918	554,900
Do. Do. Do. [bonds]	22,130,569	1,967,547
15 miscellaneous companies [stocks]	16,425,612	802,720
Do. Do. [bonds]	2,358,323	265,773
Total	1,178,567,882	$184,184,714

If this estimate of Winslow, Lanier & Co. be preferred, as to the amount of state stocks held by foreigners, $110,972,108 must be substituted in the second line of the second column, and the total will then be—

Aggregate of stocks and bonds	$1,178,567,882
Aggregate held by foreigners	222,225,315
	1,400,793,197

stocks—prices must fall far below their intrinsic value. We are not in possession of facts which enable us to form anything like a correct opinion respecting the ability of those holding railroad and other public securities to retain them, but we conclude the issue will be determined chiefly by the foreign demand. It will be seen by the statement of the Secretary of the Treasury, that while about one half the United States, and State stocks is held by foreigners, that about ninety per cent. of the railroad stocks and bonds are in the hands of our own people. A variety of causes have conspired to prevent the sale of these commodities abroad. They are new, and their character not sufficiently known to authorize the more cautious purchasers to bid for them. Much capital has been required in Great Britain and on the continent to carry on works of public improvement, and supply the wants of commerce in those countries, and withal the prospect of a war which threatened to involve the principal powers of Europe, induced the larger capitalists to hold their means in readiness for home operations. But we are persuaded, that none of these causes exist in the same force now as they did one year ago. The people of Great Britain having taken a lesson in railroad economy, from which we of this country might have profited, have since the year 1850 been moving with great caution in the construction of their works. And we have heard of no new railroad projects on the continent for some time past. The check which is now being given to the importation of goods to this country by forced sales, at a loss as is stated of 25 per cent. on cost, will diminish the demand for money for commercial purposes. And the attitude assumed by the western powers of Europe having removed the apprehension entertained of a general war, there is reason for the belief that a demand will spring up abroad for American bonds and stocks, which will afford important relief to the holders in this country.

The extent and efficacy of this relief, however, will depend in a great measure upon the state of our foreign trade. For if the importations of foreign merchandize should continue so large as to require the exportation of gold as fast as it is produced, which seems to have been the case during the current year, the relief which would otherwise be afforded by the sale of railroad securities abroad will be greatly diminished.

No increase in the amount of our exports can be expected during the current fiscal year; for the excellency of the crops in Great

Britain and on the continent of Europe precludes the idea of any considerable demand upon this country for breadstuffs, a fact which will probably reduce the amount of exports in this branch of trade twenty million dollars below that of the last fiscal year. The abundance of the crop abroad however is to be regarded as a favorable circumstance, especially at a time when the crop of cereals in this country is below that of ordinary seasons. The crop of early cereals was at least a fair one throughout the United States, and the deficit in the corn crop though considerable, will not be severely felt except in localities distant from navigation and railroads; and all things considered, we conclude that the price of bread as a general thing will rule but little, if any higher, than it has for some years past. And owing to the abundant crops abroad, we are persuaded that the money value of our exports will fall but little short of the average of the last three years.

The producing classes are generally free from pecuniary embarrassments, though perhaps not in a condition to pay the merchant with their usual promptness. The capacity of the nation to produce wealth is daily increasing, and though works of public improvement may be compelled to suspend for a season, and individuals may fail in business, we conclude there is no ground to apprehend a serious and general revulsion, such as we have experienced in times past.

The causes which gave rise to the present state of things, have in part subsided. A decided check was given to the sale of railroad securities more than twelve months ago, and though occasional sales have been effected since, they have not materially augmented the amount; the vast current of commerce which moved in the direction of California, has subsided, and judging from the large quantities of merchandize recently sold at auction in New-York at prices below cost, we conclude that the imports of foreign goods will be reduced to an amount that can be paid for without parting with so large a quantity of specie as has been required for export annually since 1850.

These are national views of the subject, but a majority of our readers are more interested in discussions touching the financial condition of the Western States, and the means of escaping from the embarrassments that seem to threaten the affairs of this part of our common country.

It must be admittod that the prospects in the central region of the Mississippi Valley are not as encouraging as we could desire. The corn crop—the principal staple in the hog-growing districts—has failed to a greater extent here than in other parts of the United States; and the large quantity of land which will be purchased under the provisions of the late law graduating its price will occasion a scarcity of money for commercial purposes. But in all other respects we believe this part of the country, especially the State of Missouri, was never more prosperous, nor its people less involved in pecuniary embarrassments. The prices of every kind of produce have been highly remunerating for several years in succession, and the crops of hemp and tobacco, of the present year, will fall but little below the average of ordinary seasons. The products of these staples, and the money which has been accumulating in the hands of farmers for several years past, will afford sufficient means to enable them to meet their obligations with their usual promptness. The inconvenience and privations experienced from a partial failure of the corn crop, must be of short duration, and will be amply compensated by the lessons of economy which they are calculated to teach. Hence, we conclude that there is little cause of complaint, and none of alarm, respecting the financial condition of the people of Missouri.

Judging from the accounts from different parts of Iowa, we conclude that the crops of that State have not fallen below the yield of ordinary seasons, and the same may be said of the corn crop of a part of Northern Illinois; and hence it may be expected that the St. Louis market will be sufficiently supplied with this important commodity at reasonable prices.

But notwithstanding this favorable view of the resources of this region, they may be so used as to diminish their efficiency, and occasion a considerable degree of embarrassment to the commercial and financial operations of the country.

The principal thing to be apprehended at the present juncture, is overcautious conduct on the part of the people: the hoarding of money with a view to invest it in property at reduced prices; putting off the payment of debts on the plea of hard times; and holding on to produce expecting to obtain exorbitant prices. These are practices which men readily adopt whenever there is a prospect of profiting by them; and to the shame of the age be it said that panics like puffs are often produced by speculators.

To our view, the citizens of Missouri have little cause to be discouraged: the position of the State is daily gaining strength by the settlement of the new territories, Nebraska and Kansas; the just adaptation of our system of public improvements to the convenience and interests of every part of the region west of the Mississippi, becomes more apparent as emigration progresses westward; and if we manifest a spirit equal to the work we have undertaken, we shall not lack the means of its accomplishment.

Missouri has made one bold move, she must now make a second to sustain the first. She has undertaken a grand system of improvement, she must furnish the means to accomplish it.

ARTICLE II.

Valley of the Ohio.

BY MANN BUTLER, ESQ.

Continued from page 408, vol. XII. No. 6.

Great Land Court of Kentucky. Fort Jefferson on the Mississippi. Clark's Expedition against Chilicothe and Pickaway. Kentucky county divided into the three counties of Fayette, Jefferson and Lincoln. Officers of these counties. Marine of Kentucky.

On the 13th of October, 1779, this great land court was opened at St. Asaphs, or Logan's station, near Standford, in Lincoln county, and John Williams was appointed clerk. Some specimens of their adjudications shall be furnished for the gratification of the reader curious in these matters. It may be well to precede these transcripts of proceedings, by an explanation of some of the technical terms used in this memorable law: a *settlement right* consisted in an allowance of "400 acres, or such smaller quantity, as the party may choose to include his improvement, or cultivation, granted to any person, who should at any time before the first of January, 1778, have really and bona fide settled himself, or his family, upon any waste and unappropriated lands on the western waters, to which no other hath any legal right or claim." For this grant two dollars and a quarter per hundred acres were required by the State of Virginia. A *Premption right* was a right which every person entitled to a settlement possessed to pay the State price for any quantity adjoining his settlement, not exceeding a

thousand acres. These claims were to be paid for, at the rate of forty dollars per hundred acres. Under this law, so unfortunate in practice, yet apparently so beneficent in appearance, the following are transcripts of proceedings. "*Michael Stoner* this day appeared and claimed a right to a settlement and premption to a tract of land lying on Stoner's fork of Licking, about 12 miles above Licking station, by making corn in the country, in the year 1775, and improving the said land in 1776: satisfactory proof being made to the court, they are of opinion that the said Stoner has a right to a settlement of four hundred acres of land, including the above mentioned improvement and a premption of one thousand acres adjoining the same, and that a certificate issue accordingly." "*Joseph Combs* this day claimed a right to a premption of one thousand acres of land lying on Comb's, since called Howard's creek, about eight miles above Boonesborough, on both sides of the creek, and about three or four miles from the mouth of it, by improving the said land, by building a cabin on the premises, in the month of May, 1775. Satisfactory proof having been made to the court, they are of opinion that the said *Combs* has a right to a premption of one thousand acres including the said improvement, and that a certificate issue accordingly." One more instance will complete the specimens of the different classes of adjudication. "*Robert Espie* this day appeared and claimed a premption of four hundred acres of land, he being a settler in this country, *who made corn* in the year 1778, as appears by testimony, lying on the waters of Paint Lick, near the land of William Kennedy, at a spring with the letters "R. A." cut on each tree. The court are of opinion that the said *Espie* has a right to the premption of four hundred acres according to law, and that a certificate do issue for the same."

Such are specimens of the decisions of this court, so interesting to the pioneers of Kentucky — the foundation of their landed estate. This court assembled at different parts of the country, to accommodate the settlers; at St. Asaphs, Harrodsburg, Falls of Ohio, Bryant's station, and finally at St. Asaphs again, when having determined about three thousand claims of different kinds, on the 26th of April, 1780, declared the expiration of its powers, and adjourned sine die. The land law under which the court sat, overflowing as it seems with charity and consideration for the meritorious settler, amidst the hardships and perils of the wilderness,

selling them farms even upon these low terms, or credit, was a measure of legislation most fruitful of curses and calamities to community. It has proved a perfect Pandora's box to Kentucky, constantly tricking her industrious and enterprising citizens out of the fruits of their brave and hardy exertions; distracting the courts and the legislature of Kentucky with its perplexities and refinements; but of this again.

The year 1780 was remarkable for the establishment of Fort Jefferson, on the Mississippi, five miles below the junction of the Ohio with that stream. Col. Clark effected this measure, in conformity with instructions from Gov. Jefferson, in order to fortify the claim of the United States to the boundary of the left or eastern bank of the Mississippi, south of the Ohio. It is now well known that neither the government of France or Spain was friendly to the extension of the American boundary to the Mississippi. Every artifice of diplomacy was resorted to by these powers, on both sides of the Atlantic, to prevent this aggrandizement of the United States. The French minister at Philadelphia had not only disgracefully prevailed in the old Congress of the Confederation, to instruct its ministers in France, "to govern themselves by the advice and opinion of the French government; to increase the number of plenipotentiaries, in order to overrule the elder Adams; and finally obtained, [no doubt through the instigation of Spanish influence on the members, and at the instance of Virginia too, an instruction to Mr. Jay [afterwards the first chief Justice of the U. S.,] not to *insist* on the free navigation of the Mississippi below the latitude of thirty-one degrees north. Spain indeed, and not feebly supported by France, endeavored to limit these States east of the Alleghany mountains, and to divide the *Valley of the Ohio* between Spain and Great Britain. This attempt to convert the *Valley of the Ohio* into British and Spanish provinces, will merit a further notice, in another part of this work. Let it remind us of the able patriot, John Jay, who resisted, under clouds of embarassment at Paris and Madrid, this severance of the old British colonies, as they had been acknowledged by the treaty of Paris, in 1763.*

A most elaborate statement of the American claims was drawn up by a committee of Congress, on the 7th of October, 1780. In this paper reference is specially made, among other weighty con-

* Jay's Life, I. 237.

siderations, to the fact, that the United States had "obtained possession of all the important posts and settlements on the Illinois and the Wabash, rescued the inhabitants from British dominion, and established civil government in its proper form over them. They have, moreover, established a post in a strong and commanding situation, near the mouth of the Ohio.* It was in the spring of this year, that this fort was established, and it has been seen that the dispatch from Congress, which is attributed by Mr. Pilkin to Mr. Madison, was drawn up in the ensuing October. The express instructions of Gov. Jefferson, of the 28th of June, 1778, to Col. Clark, contained in his papers, now conclusively show that the politic measure of establishing this fort on the Mississippi and below the Ohio, is due to the comprehensive mind of this statesman. Col. Clark, on receiving these instructions, left Kaskaskia and established this post in the lands of the Chickesaws, without having obtained their consent. Although his instructions authorised him to *compensate* the tribe for their territorial claim, Clark had not either time or inclination for such a work, not very agreeable to his notions of Indian management. After having effected this object, Clark with two men, Josiah Harland and Harmar Conolly, proceeded from the fort to Harrodsburg. The perils and hardships of such a march can scarcely be imagined at this day of peace and all the appliances of comfort. They had painted themselves like Indians, and had advanced without interruption as far as the Tennessee river. This they found foaming with high water, and Indians hunting on both sides of the river. Our chief and his companions quickly fastened a raft together with grape vines, on which to transport their rifles and clothes, and dashed into the river, in its state of flood. They had got some distance, before they were perceived by the Indians, owing to the high banks of the river; when the enemy perceived them, they quickly exchanged whoops of intelligence. But our party availing itself of a deep creek which put in, on the opposite side of the river, placed it between them and their pursuers by landing below its mouth; while the Indians had to ascend the stream in order to find a passage. The white party having landed, dashed on their destination, and escaped. Their disguise was so complete, that in approaching a fort on Red River, they were mistaken for Indians; and it was only

* Pilkin's United States, 2, 512. Spark's Letters to Washington, vol. II, 313.

the name of Clark, loudly hallooed, and the knowledge of his exploits then in every woodman's mouth, that removed the impression.

On arriving at Harrodsburg, Clark found a concourse of people from every direction, waiting to enter lands in the surveyor's office, under the new land law of Virginia. The acquisition of the new lands was the engrossing subject of all men's thoughts, as eagerly and with as much avidity amidst these hostile forests as in any stock market of a peaceful commercial city. To propose a military expedition to men under such keen and potent excitement would have been worse than useless. The public interests would not be regarded under such circumstances of individual engrossment. Should the more generous listen to them, they would leave the selfish and grasping speculator behind, to despoil them of the richest fruits of the country they were defending, at the peril of their lives and those of their families. In this predicament, Clark proposed to Mr. G. May, the surveyor of Kentucky county, to shut up his office, and then all would turn their attention to the defence of the country. This Mr. May declared he had no authority to do; but if Col. Clark would issue such an order, he would be the first man to obey it. The Colonel accordingly caused a written order to be placed on the door of the surveyor's office, notifying all persons that the office was shut by his authority, until after an expedition could be conducted against the enemy. This measure, and the high military character of Clark, procured any number of volunteers, in addition to his own State regiment, then garrisoning Fort Nelson, on the Falls of Ohio.

This expedition commanded by Clark, consisted of two regiments; one under the command of Col. B. Logan, the other under that of Col. Wm. Linn. The point of rendezvous was for both the mouth of Licking river, where they assembled with *artillery* conveyed up the river from the Falls; and in all probability brought from either Kaskaskia or St. Vincents. This force, when all assembled, amounted to nearly a thousand men.* When Clark reached the Falls, he found a letter from Gov. Jefferson advising such an expedition, dated the 19th of April, 1780; but not received until the 11th of the July following.

The secrecy and dispatch which had attended the movements of this most efficient officer on former commands, continued to mark

* Col. Patton, who was in the expedition, informed the author that it was exactly, by the rolls, 998.

his progress on this. The Indian towns of Chilicothe, on the Little Miami, and Pickaway, a principal town of the Shawnees, on Mad river, a branch of the Great Miami, were surprised and destroyed, together with the crops around them. In addition to this punishment of the enemy, with a loss of seven warriors on their part, there were as many on our own, so rarely did we ever get the advantage of inferior numbers slain, in our most successful encounters with Indians.

There was another favorite object; this was an old French store situated on an upper branch of the Great Miami, where a previous trading post had been established by British traders, and which had been destroyed by the French, in 1752; the traders had been sent prisoners to old France. This store was well known as *Loramie's* store, is referred to as much in all the early treaties of the Indians with our countrymen — in 1785 at Fort McIntosh, in 1789 at Fort Harmar, and 1795 at Fort Greenville. It was an object of particular vengeance as furnishing the Indians with arms and ammunition as well as stores of every kind: it was totally destroyed. The laying waste the little vegetable patches of the Indians, and not much larger corn-fields, can alone be justified, as the only means of bringing home the calamities of war to barbarians who, without the intervention of a large civil body of society, not partakers in the war, can only be made to feel its horrors by bringing home to them and their families the sufferings which they inflict. Col. Logan, as usual with him, particularly distinguished himself in dealing this last blow on the enemy. It was indeed one of the principal objects of the expedition. Having effected this first highly successful irruption among the north-western Indians from Kentucky, (Colonels Bowman and Logan had headed the very first,) he discharged his volunteer troops at the Ohio, and returned with his own to the Falls. Owing to these offensive measures, Kentucky enjoyed some breathing time, while the Indians were engaged in rebuilding their cabins and obtaining provisions by hunting, to supply the loss of their crops.

By the 1st of November, 1780, the population of the *county* of Kentucky, had advanced with such rapid strides, that the Legislature of Virginia subdivided the county into three different parts by the respective names of *Jefferson*, *Fayette* and *Lincoln*. The former embraced that part of the old *county*, which lay north of the river Kentucky, and north of Green river, and west of Big

Benson and Hammond's creek; the second beginning at the mouth of the Kentucky river, extended up to its middle fork, to the head, and embraced the northern and eastern portions of the present State, on the eastern side of the Kentucky river; the residue of the primitive county was called Lincoln. This increase of counties necessarily gave rise to a proportionate expansion of the civil and military organization; for each county, according to the old constitution of Virginia, required a municipal and military system of its own. For this purpose, *John Floyd* was appointed first Colonel, and William Pope* Lieutenant Colonel; Ben. Logan Colonel, and Stephen Trigg Lieutenant Colonel of Lincoln county; John Todd Colonel, and Dan. Boone Lieutenant Colonel of Fayette county. A commission of "Brigadier General of the forces to be embodied in an expedition westward of the Ohio," was issued to Col. Clark. It is preserved among his papers, under the signature of Thomas Jefferson, and dated January 22d, 1781.

Each of the counties had likewise a court of qualified civil and criminal jurisdiction, as was noticed in regard to the original county of Kentucky. There was no court, however, competent to try capital cases nearer than Richmond, the seat of government of Virginia. Fortunately, owing to the simplicity of manners, the circumscribed wants of the people, together with the equal and rude state of property, there were few temptations to violence requiring the interposition of the criminal law. The first surveyors in the new counties were George May for Jefferson, Col. Thomas Marshall† for Fayette, and James Thompson for Lincoln. The services of the two latter were loudly and, for some time, vainly called for.

The new system of defending the country by the gallant man, whom we now so gladly salute as Gen. Clark, deserves a few words. Spies or scouts were scattered over the frontier, who reported to the General, posted at Fort Nelson, at the Falls of Ohio. To those was added a new galley armed with four-pounders and constructed for plying up and down the river,‡ between the Falls and the mouth of Licking river.‖ This served as a floating fortification; but was too limited in its sphere of duty, and too unsupported by other

* The father of the late William Pope, Senator of Jefferson county.

† The father of the great Chief Justice.

‡ Marshall, I, 120.

‖ The wreck of this galley is said to have produced the formation of the point of Bear Grass creek, just above the present city of Louisville.

galleys adapted to the same purpose, to produce much effect. It is, however, said to have intimidated the Indians, so much as to prevent expeditions across its line of operations. On one occasion it is reported to have stopped a formidable invasion near its upper station. The aversion of the militia to acting in this species of marine service, and the reduction of the regular force, compelled Gen. Clark to lay aside the galley before the close of the year. The plan itself, so novel in the western waters, however, shows the military readiness of the author.

The severity of the winter of 1779—1780 must not be omitted; it was known by the emphatic name of the *Hard Winter*. It affected the wild herds of the forest, driving them, in spite of their instincts, to the habitations of man for sustenance. The distress of the immigrant families was overwhelming; "compelled to encamp and abide the storm, the pains of hunger and cold were inflicted on them in many instances, in a most excruciating degree."* The wild game, as well as the tame cattle, perished; "and it is a fact, that a part of those dead carcasses became the necessary viands of some of the unfortunate and helpless travellers."†

The establishment of Fort Jefferson formerly mentioned provoked an attack upon it by the Chickesaws and Choctaws, in whose lands it had been built, without their consent. A purchase had been positively instructed to be made of the Indians by the governor of Virginia; though the circumstances which prevented it are unknown. In resentment of this threatening intrusion, it is supposed, Colbert, a Scotch gentleman who had ingratiated himself with these Indians, the ancestor of the chiefs of that name, appeared with all his warriors before Fort Jefferon, some time in the summer of 1781. The attack, it is said by one who was a boy in the fort at the time,‡ lasted five days. The Indians principally encamped on the island now known as Island No. 1, just above Mayfield's creek. The garrison did not exceed thirty men, under the command of Capt. George; two thirds of this small number being sick with the fever and ague, reduced the post to the lowest extremity. Pumpkins with the blossom yet upon them, were their principal food. On the 6th day George and Colbert, the Indian chief, met under a flag of truce, to agree upon terms of capitula-

* Idem, I, 102.

† Idem.

‡ Capt. Donne, a well known Falls' pilot, late of Louisville.

tion; they were unable to effect this object; as Colbert was retiring, he received a wound from some of the Indians,* who were with our men in the block houses, and fell. This treachery, according to our *own* usages, enraged the Indians to the utmost pitch of exasperation; and at night they collected all their forces and made a furious assault on the fort, endeavoring to take it by storm. When the Indians had advanced in very close order, Capt. George Owen, who commanded one of the block houses, had the swivels [could these have been the Kaskaskia guns?] loaded with rifle and musket balls, fired into the crowded ranks of the enemy. The consequent carnage was excessive, and the enemy dispersed.

At the same time, Gen. Clark who was stationed at Kaskaskia, and had been sent for, arrived with provisions and a reinforcement which effectually raised the siege to the great relief of the garrison. This fort was some time afterwards abandoned, owing to the difficulty of supplying such remote and detached posts. It is worthy of remark, that the State of Kentucky goaded to madness, as she has been by Indian outrage, submitted to the occupation of the north-western section of her territories by the Chickasaws, until their title was peaceably extinguished by the treaty of the United States, in 1818, with that tribe. The fact presents an exemplary regard for aboriginal rights, which may well dictate a lesson of forbearance with the tribes of the forest to *all* the members of our confederate republic.

* Capt. Patton's Papers.

ARTICLE III.

From the United States Mining Journal.

Mining and Metallurgy of the Ancient.*

THE GOLD MINES OF EL ALLAGA.

"The vast numbers employed in these mines are bound in fetters, and compelled to work day and night without intermission, and without the least hope of escape; for they set over them barbarian soldiers, who speak a foreign language, so that there is no possibility of conciliating them by persuasion, or the kind feelings which result from familiar converse.

"When the earth containing the gold is hard, they soften it by the application of fire, and when it has been reduced to such a state that it yields to moderate labor, several thousands (myriads) of these unfortunate people break it up with iron picks. Over the whole work presides an engineer, who views and selects the stone, and points it out to the laborers. The strongest of them, provided with iron chisels, cleave the marble shining rock by mere force, without any attempt at skill; and in excavating the shaft below ground they follow the direction of the shining stratum without keeping to a straight line.

"In order to see in these dark windings, they fasten lamps to their foreheads, having their bodies painted, sometimes of one and sometimes of another colour, according to the nature of the rock; and as they cut the stone, it falls in masses on the floor, the overseers urging them to the work with commands and blows. They are followed by little boys, who take away the fragments as they fall, and carry them out into the open air. Those who are above thirty years of age are employed to pound pieces of the stone, of certain dimensions, with iron pestles in stone mortars, until reduced to the size of a lentil. The whole is then transferred to women and old men, who put it into mills arranged in a long row, two or three persons being employed at the same mill, and it is ground until reduced to a fine powder.

"No attention is paid to their persons, they have not even a piece of rag to cover themselves, and so wretched is their condition, tha tevery one who witnesses it deplores the excessive misery they endure. No rest, no intermission from toil are given either to the sick or maimed. Neither the weakness of age, nor women's infirmities are regarded—all driven to their work with the lash, till at last, overcome with the intolerable weight of their afflictions, they die in the midst of their toil. So that these unhappy creatures always expect worse to come than what they endure at the present, and long for death as far preferable to life.

* *A popular account of the Ancient Egyptians.* Revised and abridged from his larger work. By Sir J. GARDNER WILKINSON, D. C. L., F. R. Soc., in two volumes. Illustrated with five hundred Engravings. New York: HARPER & BRO.

"At length the masters take the stone thus ground to powder and carry it away to undergo the final process. They spread it upon a broad table a little inclined, and, pouring water upon it, rub the pulverised stone until all the earthy matter is separated, which, flowing away with the water, leaves the heavier particles behind on the board. This operation is often repeated, the stone being rubbed lightly with the hand, they then draw up the useless and earthy substance with fine sponges, gently applied, until the gold comes out quite pure. Other workmen then take it away by weight and measure, and, putting it with a fixed proportion of lead, salt, a little tin, and barley bran, into earthen crucibles, well closed with clay, leave it in a furnace for five successive days and nights, after which it is suffered to cool. The crucibles are then opened, and nothing is found in them but the pure gold, a little diminished in quantity.

"Such is the method of extracting the gold on the confines of Egypt,—the result of so many and such great toils. Nature, indeed, teaches that as gold is obtained with immense labour, so it is kept with difficulty, creating great anxiety, and attended in its use both with pleasure and grief.

The skill and perfection of the Artificers in Gold at that early period, may be judged, from the various articles of use and ornament mentioned in the Bible as being composed of, or overlaid with

GOLD LEAF.

"In the early stages of society, when gold first began to be used, idols, ornaments, or other objects were made of the metal in its pure state, till, being found too soft and too easily worn away, an alloy was added to harden it, at the same time that it increased the bulk of the valuable material. As men advanced in experience, they found that the great ductility of gold enabled them to cover substances of all kinds with thin plates of the metal, giving all the effect of the richness and brilliancy they admired in solid gold ornaments, and the gilding of bronze, stone, silver, and wood, was speedily adopted.

"The leaves so used were at first thick, but skill, resulting from experience, soon showed to what degree of fineness they could be reduced; and we find that in Egypt substances of various kinds were overlaid with fine gold-leaf at a very remote period, even in the time of the first Osirtasen. Some things still continued to be covered with thick leaf, but this was from choice, and not in consequence of any want of skill in the workmen; and in the early age of Thotmes III., they were acquainted with the various methods of overlaying with gold-leaf, gilding, inlaying, and beating gold into other metals, previously tooled with devices to receive it.

"That the practice of applying it in leaf was common when the Israelites were in the country is evident from the direct mention of it in the Bible, the ark of shittim wood made by Moses being over-

laid with pure gold; and the casting of the metal is noticed on the same occasion, nor can we doubt that the art was derived by the Jews from Egypt, or that the Egyptians had long before been acquainted with all those secrets of metallurgy, in which the specimens that remain prove them to have so eminently excelled.

"The method devised by the Egyptians for beating out the leaf is unknown to us, but from the extreme fineness of some of that covering wooden and other ornaments found at Thebes, we may conclude it was done nearly in the same way as formerly in Europe, between parchment; and perhaps some membrane taken from the intestines of animals was also employed by them.

"In Europe the skin of an unborn calf was at first substituted for the parchment previously used, but in the beginning of the 17th century, the German gold-beaters having obtained a fine pellicle from the entrails of cattle, found that they could beat gold much thinner than before, and this still continues to be used, and is known to us under the name of gold beaters' skin. 'About the year 1621,' says Beckmann, 'Merunne excited general astonishment when he showed that the Parisian gold-beaters could beat an ounce of gold into sixteen hundred leaves, which together covered a surface of one hundred and five square feet. But in 1711, when the pellicles discovered by the Germans came to be used in Paris, Reaumur found that an ounce of gold in the form of a cube, five and a quarter lines at most in length, breadth and thickness, and which covered only a surface of about 27 square lines, could be so extended by the gold-beaters as to cover a surface of more than 1466½ square feet. This extension, therefore, is nearly one half more than was possible about a century before.'

"Many gilt bronze vases, implements of various kinds, trinkets, statues, toys, and other objects, in metal and wood, have been discovered in the tombs of Thebes: the faces of mummies are frequently found overlaid with thick gold-leaf; the painted cloth, the wooden coffin, were also profusely ornamented in this manner, and sometimes the whole body itself of the deceased, previous to its being enveloped in the bandages. Not only were small objects appertaining to the service of the gods, and connected with religion, or articles of luxury and show, in the temples, tombs, or private houses, so decorated; the sculptures on the lofty walls, of an adytum, the ornaments of colossus, the doorways of a temple, and parts of numerous large monuments, were likewise covered with gilding, of which the wooden heifer which served as a sepulchre to the body of King Myeerinus's daughter—some of the mouldings in the temple of Kalabshi in Nubia—the statue of Minerva sent to Cyrene by Amasis—and portions of the Sphinx at the Pyramids—may be cited as instances. Gold is supposed to have been used for money some time before silver. In Egypt it was evidently known before silver, this being called 'White Gold;' and it was there the representative of money; while in Hebrew,

kussuf, 'silver,' signified 'money,' like 'argent' in French. In neither case was the money coined in early times. Gold was perhaps first stamped by the Lydians; but the oldest known Greek coines are the silver ones of Ægina, with a tortoise on one side.

"Much gold was used for ornamental purposes. Its richness, durability, and freedom from tarnish, led the ancients to employ it very generally, and to a greater extent than in modern times, when South America has given us the abundance, and the name of 'plate.' Silver was chiefly confined to money; and the demand for gold in houses (Plin. xxxiii. 17), and in jewellery, left silver free for the currency, and for a few other purposes. But though gold was preferred, it is still singular that so few pieces of silver plate seem to have been made by the Greeks and Romans.

"The Egyptian sculptures represent silver as well as gold vases and ornaments, in the time of the third Thothmes, and silver rings and trinkets have been found of the same epoch; but gold was the favorite metal in Egypt, as afterwards, in Greece and Rome; and the rich frequently had ornamental works, statues, and furniture of solid gold. Those who could not afford them were satisfied to have bronze overlaid with gold, at first with a thick, in after times, with a thin coating, until in time gold-beating brought the external appearance of gold within the reach of less wealthy people; and gold leaf in modern days covers the wooden ornaments of the humblest house. Now that gold is in greater abundance, we may look to its coming again into more general use, instead of silver, which sinks into the appearance of pewter by the side of that rich metal, and to its taking the place of some of our paltry imitations.

"If the use of gold preceded that of silver, the latter was not long in following it; and the earliest authority, the Bible, mentions both at a remote age. Abraham was said to have been 'very rich in cattle, in silver, and in gold;' Abimelech gave him a thousand pieces of the former; and the use of silver as money is distinctly pointed out in the purchase of the field of Ephron, with its cave, which Abraham bought for 'four hundred shekels of silver, current money with the merchant.' On this occasion, as usual, the price paid was settled by weight, which was the origin and meaning of the name shekel; and the custom of weighing money was retained among the Egyptians, Hebrews, and other Eastern people, till a late period. Indeed until a government stamp, or some fixed value, was given to money, this could be the only method of ascertaining the price paid, and of giving satisfaction to both parties. Thus Joseph's brethren, when they discovered the money returned into their sacks, brought it back to Egypt, observing that it was 'in full weight;' and the paintings of Thebes frequently represent persons in the act of weighing gold, on the purchase of articles in the market.

The Antiquity of Coined Money.

"Egyptian money was in rings of gold and silver, a kind of cur-

rency that continues to this day in Sennaar and the neighboring countries; but it is uncertain whether any of them had a government stamp to denote their purity or their value; and though so commonly represented, none have yet been found in the ruins or tombs of Thebes. They remind us of the 'ring (nuzm) of gold' in Job XLII. 11, given him with 'a piece of money' by his friends.

"Gold when brought as a tribute was often in bags, which were deposited in the royal treasury. These doubtless contained gold dust, which is mentioned by Job (xxviii, 6.) as a well-known form of that metal, and this is confirmed by 'pure gold' being written over them. Though sealed, and warranted to contain a certain quantity, they were subjected to the usual ordeal of the scales by the cautious Egyptians. Money was sometimes kept ready weighed in known quantities for certain occasions, which when intended as a present, or where the honesty of a person was beyond suspicion, did not require to be weighed; as when Naaman gave 'two talents of silver in two bags' to Gehazi (2 Kings, v. 23; see Tobit ix, 5,) The Egyptians had also unstamped copper money, called in the papyri 'pieces of brass;' which, like the gold and silver, continued to be taken by weight even in the time of the Ptolemies; and it was only by degrees that the Greek coinage did away with the imperfect system of weighing the price paid for every commodity.

"But these princes were not the first who introduced coined money into Egypt; it had been current there during the Persian occupation of the country; and Aryandes, who was governor of Egypt under Cambyses and Darius, struck silver coins, in imitation of the gold Darics of his sovereign, for which act of presumption he was condemned to death.

"They are supposed to be those with an owl, and the Egyptian sceptres of Osiris, the crook and flail, on the obverse; and an archer on a hippocampus, with a dolphin, on the reverse.

"The art of stamping money in Asia began in the dominions of Lydia. Herodotus says the Lydians were 'the first people who coined gold and silver for their own use;' and if Ægina claims the earliest coinage, this does not contradict Herodotus, as it was only the earliest in relation to Greece. The oldest coins that have been found are the statars of Lydia, which date only a little before the very ancient ones of Cyzicus. They are not of pure gold, but of Electrum, or three parts of gold and one of silver; probably owing to the two metals having been found together, and first stamped in that state. They were mere lumps, or dumps, of a certain weight; often cracked at the edge from being suddenly flattened by the blow. They were impressed with a lion's head, or other emblem, on one side only. Similarly rude were the old Æginetan coins, with a tortoise on one side, and on the other the mark of the block on which the lump of metal was fixed while struck. These last were all of silver, none of gold; and the oldest kind of real gold were those of Darius.

"Phidon, king of Argos, is said to have invented weights and measures, (that is in Greece,) and to have established the silver coinage of Ægina. B. C. 895: and though Pausanias thinks gold and silver money were unknown in the age of Polydonis, king of Sparta, (who died B. C. 124), the authority of the Parian Chronicle, and of Ælian, favour

the earlier claims of Ægina. The coins of Syracuse and Magna Græcia date from 700 B. C.; having, like all others before 500 B. C. only a figure on one side; and the first silver coins of Athens were struck in 512 B. C. The gold Darics had only a figure on the obverse, representing an archer. They were coined about 500 B. C., and had not yet the round shape of later pieces, nor of the silver Darics, being 5-8ths of an inch long by 7-16ths. They were worth about 1*l.* 1*s.* 10*d.* each. These and other early coins therefore do not borrow their form from ring money, which may perhaps be traced in those of China.

"Habit would naturally retain an original type for a long time; and sometimes even in Greece the archaic character of a coin was continued long after art had improved. Thus the old head of Minerva was repeated on the late Athenian drachm and tetra drachm, because strangers were accustomed to it in commerce, and the Athenians were satisfied to use the well known Corinthian didrachm for the same reason, as all people on the Mediterranean still welcome the pillar dollar of Spain.

"The tradition of pecunia being called from pecus, and of the ox or sheep having been at first a substitute for moneys as in Greece and Rome, accords with a custom still common among some people, of making them the standard of valuation; in Darfoor and Kordofan a piece of cotton cloth is reckoned equal to a sheep, and in Job (X, 11. 11), the name Kesiteh (or 'lamb') is employed to signify a piece of money. Homer also reckons the value of certain things as equal to an ox; and in Solon's time a sheep was equivalent to a bushel and a half of corn.

"If stamped money was not used by the ancient Egyptians we have evidence of weights and measures having been invented by them long before the Greeks existed as a nation: and it is probable that they were known even in Greece previous to the time of Phidon.

"One kind of balance used for weighing gold differed slightly from those of ordinary construction, and was probably more delicately formed. It was made, as usual, with an upright pole, rising from a broad base or stand, and a cross beam turning on a pin at its summit; but instead of strings suspending the scales, was an arm on either side, terminating in a hook, to which the gold was attached in small bags.

"Large scales were generally a flat wooden board with four ropes attached to a ring at the extremity of the beam; and those of smaller size were of bronze, one and a half inch in diameter, pierced near the edge in three places for the strings.

"The principle of the common balance was simple and ingenious; the beam passed through a ring suspended from a horizontal rod, immediately above and parallel to it, and when equally balanced, the ring, which was large enough to allow the beam to play freely, showed when the scales were equally poised, and had the additional effect of preventing the beam tilting, when the goods were taken out of one, and the weights suffered to remain in the other scale. To the lower part of the ring a small plummet was fixed, and this being touched by the hand, and found to hang freely, indicted, without the necessity of looking at the beam, that the weight was just. The figure of a baboon was sometimes placed upon the top, as the emblem of the god

Thoth, the regulator of measures, of time, and of writing, in his character of the moon; but there is no appearance of the goddess of Justice being connected with the balance, except in the judgment scenes of the dead.

"The pair of scales was the ordinary and, apparently, only kind of balance used by the Egyptians; no instance of the steel-yard being met with in the paintings of Thebes, or of Beni Hasan; and the introduction of the latter is confined to a Roman era.

"The Egyptians had another kind of balance, in which the equalization of the oposite weights was ascertained by the plummet; and this last, whose invention has been ascribed by Pliny to Dœdalus, is shown to have been known and applied in Egypt at least as early as the time of the Osirtasens.

Copper and Iron.

"For ordinary purposes copper was most commonly used; arms, vases, statues, instruments, and implements of every kind, articles of furniture, and numerous other objects, were made of this metal hardened by an alloy of tin, and even chisels for cutting stone, as well as carpenter's tools, and knives were of bronze. It is generally allowed that copper or bronze was known long before iron, and though Tubal Cain is said to have been 'the instructor of every artificer in brass and iron,' no direct mention is made of iron arms or tools till after the Exodus.

"According to the Arundelian marbles, iron was known one hundred and eighty-eight years before the Trojan war, about 1370 years B. C., but Hesiod, Plutarch, and others limit its discovery to a much later period, after the capture of Troy. Homer, however, distinctly mentions its use* and that there is little reason to doubt the sideros of the poet being iron, is shown by the simile, derived from the quenching of iron in water: which he applies to the hissing noise produced on piercing the eye of Polyphemus with the pointed stake, thus rendered by Pope:—

> "And as when armourers temper in the ford
> The keen-edged poleaxe, or the shining sword,
> The red hot metal hisses in the lake,
> Thus in his eyeball hiss'd the plunging stake."

"His 'black kyanus' is also thought tobe steel, as well as the adamas of Hesiod, who mentions the iron of the Idaei Dactyli in Crete; and the skill of the Chalybes in its manufacture, dates from a very remote age. Among the earliest authorities for the use of iron may be cited the bedstead of Og, King of Bashan, who is said to have lived about the year 1450 before our era; and Thrasyllus agrees with the Arundelian marbles in supposing iron to have been known before the Trojan war, or, indeed, one hundred and fourteen years previous to the foundation of Troy, 1537 before our era. On the other hand, it has been argued, that offerings of iron in the temples of Greece distinctly showed the value attached to that metal, as well as its limited use for ordinary purposes, and rings of iron were worn by the ancients, some of which have been found in the tombs of Egypt. But these last are of very late date, long after iron was commonly used, and I possess one of them, engraved with the figure of Harpocrates, which is of a

* Hom. Iliad. XXIII., 261, &c.

Ptolemaic, or rather of a Roman era, and which only claims some degree of interest from its bearing a device noticed by Pliny as becoming fashionable at Rome in his time.

"That iron, as early as the days of Lycurgus, was held in little estimation, is shown by that legislator forbidding the introduction of gold and silver in his republic, and restricting the Spartans to the use of iron; and some notion may be formed of its value at that time by the assertion of Plutarch that it required a cart drawn by two oxen to carry the small sum of ten miriæ.

"The Jews apppear to have been acquainted with two kinds of iron previous to the Babylonish captivity, the barzel, which was in common use, and the northern iron, as well as steel; even as early as the days of Job iron was known; and Moses mentions an iron furnace.

"One of the arguments against the early use of iron is the difficulty of smelting the ore, and of reducing it to a malleable state; and the various processes required to discover all its most useful properties render it less likely to be employed than a more ductile metal. Gold, silver, and copper were easily fused, and a single process sufficed to make them available for every purpose, the principal art required for fabricating implements of copper depending on the proper proportions and qualities of alloy introduced.

"In the infancy of the arts and sciences, the difficulty of working iron might long withhold the secret of its superiority over copper and bronze; but it cannot reasonablo be supposed that a nation so advanced and so eminently skilled in the art of working metals as the Egyptians and Sidonians, should have remained ignorant of its use, even if we had no evidence of its having been known to the Greeks and other people; and the constant employment of bronze arms and implements is not a sufficient argument against their knowledge of iron, since we find the Greeks and Ramans made the same things of bronze long after the period when iron was universally known.

"Another argument to show that bronze was used in Greece before iron is derived from the word 'coppersmith,' having, in Greek, the signification of 'smith,' whether applied to a worker of copper or iron. In Latin, on the contrary, ferrum, 'an iron,' is a word frequently applied to a sword, and some have since argued the use of iron for those weapons at the earliest period among the Romans, which is confirmed by the treaty imposed upon them by Porsena, binding them not to use iron, except for agricultural implements. But long after iron was used by them, the Romans and Etruscans continued to make swords, daggers, spearheads, and other offensive weapons of bronze, as well as their defensive armour; and the discovery of arms and tools of bronze ceases to argue an ignorance of iron.

"To conclude, from the want of iron inrtruments, or arms, bearing the names of early monarchs of a Pharaonic age, that bronze was alone used, is neither just nor satisfactory, since the decomposition of that metal, especially when buried for ages in the nitrous soil of Egypt, is so speedy as to preclude the possibility of its preservation. Until we know in what manner the Egyptians employed bronze tools for cutting stone, the discovery of them affords no additional light, nor even argument, since the Greeks and Romans continued to make bronze instruments of various kinds so long after iron was known to

them; and Herodotus mentions the iron tools used by the builders of the Pyramids.

"Iron and copper mines are found in the Egyptian desert, which were worked in old times; and the monuments of Thebes, and even the tombs about Memphis, dating more than 4000 years ago, represent butchers sharpening their knives on a round bar of metal attached to their apron, which, from its blue color, can only be steel; and the distinction between bronze and iron weapons in the tombs of Remeses III., one painted red, the other blue, leaves no doubt of both having been used (as in Rome) at the same period. In Ethiopia iron was much more abundant than in Egypt, and Herodotus states that copper was a rare metal there, though we may doubt his assertion of prisoners in that country having been bound with fetters of gold.

"The speedy decomposition of iron would be sufficient to prevent our finding implements of that metal of an early period, and the greater opportunities of obtaining copper ore, added to the facility of working it, might be a reason for preferring the latter whenever it answered the purpose instead of iron. Bronze tools might also be made available for sculpturing and engraving stone; though there is great difficulty in accounting for their use in mines and quarries, where the stone was frequently hewn with them, as Agatharchides informs us in his account of the gold mines, and as was evidently done in cutting the lime stone rock of the tombs of Thebes, a bronze chisel having been found amidst the chippings of the stone, where it had been accidentally left by the workmen.

"The hieroglyphics on obelisks and other granitic monuments are sculptured with a minuteness and finish which is surprising, even if they had used steel as highly tempered as our own.

"Some are cut to the depth of more than two inches, the edges and all the most minute parts of in taglio presenting the same sharpness and accuracy; and I have seen the figure of a king in high relief, reposing on the lid of a granite coffin, which was raised to the hight of nine inches above the level of the surface. What can be said, if we deny to men who executed such works as these, the aid of steel, and confine them to bronze implements? Then, indeed, we exalt their skill in metallurgy far beyond our own, and indirectly confess that they had devised a method of sculpturing stone of which we are ignorant. In vain should we attempt to render copper, by the addition of certain alloys, sufficiently hard to sculpture granite, basalt, and stones of similar quality. No one who has tried to perforate or cut a block of Egyptian granite will scruple to acknowledge that our best steel tools are turned in a very short time, and require to be re-tempered; and the labor experienced by the French engineers, who removed the obelisk of Luxor from Thebes, in cutting a space less than two feet deep along the face of its partially decomposed pedestal, suffices to show that, even with our excellent modern implements, we find considerable difficulty in doing what to the Egyptians would have been one of the least arduous tasks. The use of tools on granite is thus described by Sir R. Westmacott:

"Granite, as most hard materials of that nature, being generally worked with a pick of various strength, until reduced to a surface, the duration of the tool depends on its form; the more obtuse, the

longer it will work, remaining longer cold. In jumping, (as it is termed) holes for the admission of bolts into fractured parts of granite the tools are usually of strong tempered iron, about three quarters of an inch in diameter, which resist the heat sometimes half an hour, seldom longer; one man holds and turns, or moves the tool, whilst the other strikes it with a heavy hammer, the whole being supplied with water. Tools of less diameter are formed of steel, but these will not resist more than 300 strokes, when the points fly, and require to be fresh battered. Sculptors generally use tools formed of blistered steel, the finer sort highly tempered by immersing them, when heated to a proper degree, into cold water."

"Some have imagined that the granite, being somewhat softer at the time it is taken from the quarry, was more easily sculptured when the Egyptians put up the obelisks than at present, and thus satisfy themselves that the labor was considerably less; but this argument is entirely overthrown by the fact of other sculptures having been frequently added, one hundred, and one hundred and fifty years after the erection of a monument, as in the lateral lines of hieroglyphics on obelisks, which are sometimes found more deeply cut and more beautifully executed than those previously sculptured, others have suggested that the stone being stunned, as it is termed in those places where it was to be sculptured, yielded more readily to the blow of the chisel; but neither is this sufficient to produce the effect proposed, nor an advantage, exclusively enjoyed by the ancient Egyptians.

"Thus, then, the facility they possessed in sculpturing granite is neither attributable to any process for bruising the crystals, or to its softer state on coming from the quarry, and we have still to discover the means."

ARTICLE IV.

Sketches of Peru.—From the Exploration of Lieut. GIBBON.

Tarma—Quichua Indians—Industrial Pursuits—Amusements—Manners and Customs of the Peruvians—Inca road—Wool growing—Trade—Snow mountains—Silence of the Andes—Harvesting—Juaga Valley and Town—Longevity—Affection of Animals—Remains of an Ancient City—Goitre—New World camels: Llama-huanaco—Alpaca—Huancavelica—Quicksilver mines of Santa Barbara—Romping games.

Tarma, a small town in Peru, by alpha and beta, Centauri, in latitude 11° 25′ south, is situated in a rich, well-cultivated, narrow valley, between the Andes range of mountains on the east, and the lofty Cordillera chain on the west.

On the 9th of July, 1851, the writer turned southeast, accompanied by Henry C. Richards, a native of Virginia, in the United States, and José Casas, of Spanish descent, native of Peru.

A volunteer mestizo, Arriero, with his little son, drove a train of mules which carried the baggage.

Our path was shaded by willow trees, and the way obstructed with droves of llamas, loaded with rock salt from mines in the neighborhood.

The leaves of the trees seemed calling for water, while the temperature of the air, at mid-day, in the shade, was 68° Fahrenheit. Peach and apple-tree leaves doubled up, showing both their edges to the sun; the fruit is small, oblong, and unthrifty-looking.

The ravine through which we ascend is thickly populated with Quichua Indians. Their houses are built of stone and mud, and thatched with coarse mountain grasses.

The natives are busily employed gathering in the harvest of maize, which is small-grained and of four colors, red, white, yellow, and blue. It is of excellent quality, generally used as food, roasted or parched.

Potatoes, of which there are numerous varieties, are also now gathered; they grow in perfection, though much smaller than their descendants in the United States.

The little estates—chacrás—are owned by descendants of Spaniards, Indians, or Mestizos, the latter a cross between the two former.

In almost all cases the cultivation of the soil is performed by the aborigines, at wages from ten to twenty cents a day.

As we rise above the foliage, the mountain tops begin to look wild and barren, with rocks and white clay; below we have a beautiful view of the town of Tarma, amidst its green trees and pasture fields. My mule, Rose, pants for breath; she is so fat and plump that the climbing troubles her.

On the mountain-side is seated a fine looking Indian, blowing a semicircular shaped trumpet, made of a number of cow's horns, stripped one into the other, with the joints sealed; he don't seem to be so particular as to the tune, as he does to the distance he may be heard, and he makes the valley ring. José thinks he is trying to blow up a wedding with a fair one among the flowers below. The Indians celebrate harvest-time with merry-making. Their meals are cooked in the fields, where their kitchen utensils are carried. They have music and dancing in the barley stubble. It is amusing to see these happy people enjoying themselves in the open air. As we pass, the reapers are seated near the road, in a barley field, at dinner, upon the ground, in rows one behind another, laughing and talking among themselves. When we meet them they are very civil, modest and unassuming in manners. The men carry enormous loads of barley or wheat on their backs, while the women drive the loaded ass, and sling the children over their own shoulders. Their horses, mules, sheep, horned cattle, pigs, and dogs, are all admitted, together with the family, into the harvest field; while the father reaps, and the mother gathers, the boys tend

the flocks, and the older girls take care of the babies and do the cooking, while at the same time they spin woollen yarn by hand, for stockings. One of them offered a pair for sale at twenty-five cents, which were nearly long enough for trowsers. They are always employed, go to bed early, and rise before the sun, as their Incas taught them to do.

At the top of the mountain, not a house or tree was to be seen, and no sign of cultivation. On tufts of coarse mountain grass, a flock of sheep were grazing; some of them merinos, and of good size. Their wool is sent to Lima, where it is sold, to be exported around Cape Horn, to the manufacturers in the North.

To the east is a snow-peaked mountain, and as the moon rises, as if from the Atlantic ocean, we are followed by a cold north wind. The sky is clear and of a deep blue. On our left we see the remains of an ancient Peruvian road, used in the times of the Incas. It is said that *good* roads are marks of civilization; could my mule, Rose, give her opinion, she would certainly decide in favor of the Inca road, in preference to those found in Peru at the present time. These remains show a width of thirty feet of rock pavement, with well placed curbstones on each side. Where the road has considerable inclination, rows of stone are placed across, higher than the general level of the pavement, so that it appears like a stair-way on the side of a hill. That it was not a coach road is no argument against it; it was before the horse, the ass, or the cow were introduced into South America from Europe. It was constructed for the Indian and his llama, the surest of the sure-footed, and, therefore, the improvement speaks well for the civilization of those times of which we have but a traditionary record.

Passing over a plain on the mountain top, there was a cistern by the side of our path, where water is caught during the rainy season to supply the thirsty in the dry. The rainy season commences here about the middle of September—sometimes later—and lasts six months. The remainder of the year is dry.

Night had overtaken us where not a leaving thing was to be seen, except a black eagle, returning to its roosting-place under overhanging rocks, on the west side of a lofty peak. Our little tent was pitched; the package piled up and covered at the door; the mules let free for the night to feed upon the mountain grass around us. A fire was kindled, and water from a small spring heated, and tea was made. José produced bread and cheese from his saddle-wallets; placed them upon a clean cloth over a trunk; looking into the tent, he says, very slowly, "*Senor! La hora de cenar,*" (Sir, it is the supper hour.) Both men and beasts seem tired; we have ascended all day. The first day's travel is always the most harassing. Our arriero, Francisco, a mestizo, is a small, slim built man, with respectful manners; he and his little son Ignacio keep watch by turns over the mules. The little boy is

out while his father gets supper. The night was clear and cold; the moon shining brightly. The world is not so silent in the middle of the ocean. I do not think I heard anything; I almost listened to hear the globe turn upon its axis. Long after the people were asleep, I heard little Ignacio singing to himself, wrapped up in his homespun poncho, as he follows the mules.

At daylight in the morning we found heavy frosts and ice about us, with thermometer 24°, and wet bulb 30°. The mules were loaded; breakfast over; observations made; and we off, soon after sunrise. This is the way to travel at an elevation where we find no inhabitants.

The mountains are becoming more rounding, and covered with a fine sort of grass. Shepherdesses are following thousands of sheep and lambs. The girls spin wool and chat together, while the dogs follow lazily after. If we pass close to the flock, and the sheep run back, these dogs make a furious attack upon us, keeping between us and the flock. The temperature of a spring of excellent water near the path was 48°. To the southeast snow peaks stand up in full view. The day is warm and pleasant. Here comes a cheerful party of ladies and gentlemen on horseback. As we pass each other, the gentlemen take off their hats, and the ladies look prettily under their white straw ones. Their figures show to advantage in riding-dresses, and they manage and set their horses well. The cool mountain air gives them a fresh color, which contrasts well with gazelle-eyed beauty and long black hair. I thought their dresses rather short, but a sight of the foot of one of them, small as it was, reminds one there is proof positive against the propriety of a man's travelling through this world alone.

Now we meet the market Indian driving asses loaded with potatoes, corn, and saddles of mutton, to Tarma. I wanted some mutton for the party, but José was positively refused by an old woman, who got out of his way by twisting the tail of her donkey, who was disposed to come to a stand and be relieved of his load. I was told Indians scarcely ever sell except after they arrive in the plaza. I can account for it by the woman's wanting to go to town, for José offered her more than the market price.

At the end of a thickly populated valley, which stretches off to the southeast, we halted at an Indian hut for dinner. The wife was at home with her children—fine, healthy-looking little ones. Boiled mutton, potatoes, and eggs, with good wheat bread, were placed upon the ground at the door. The children and dogs formed an outside circle around us. After dinner the woman gave me an orange, which she said came from the woods, pointing to the Andes, to the east of us. Some of these Indians cross the range of mountains, and garden on the eastern slopes for the markets, on these table lands—*Puna*—as the Spaniards call the elevated flats.

The husband was threshing barley with his neighbours. The grain is separated from the straw by the tramping of oxen and horses. Over the surface of this level valley there are numbers of such threshing parties. The grain is cleared from the chaff by being poured from the top of a man's head on a windy day. Many of them suffer with inflamed eyes, and even lose them sometimes by a shift of wind, which blows the barley beards into the eyes.

Black cattle are numerous here, and at the foot of the mountains; so are white churches, which stand in the midst of a thick population of Indians. We met a number of tax-gatherers, going among the threshers, with silver-headed canes, receiving a measure of grain instead of contribution-money. They are old Indians, very well dressed, with a respectable, quaker like air about them; broad-brimmed hats and standing collars. It is an active time also with the priests, who go abroad among the farmers for tithes. The valley is all activity, and merry are the people. Women are visiting about from place to place, astride of plump little jackasses. This is a plentiful season.

When the crops fail on these table lands, the suffering among the Indians is very great. Seeding time is in September, just before the rains commence. If there are hard frosts in February, the chances are that a famine follows.

Crossing a small ridge on the east, we came in full view of the great valley of Juaja, stretching away south. The snowy peaks are represented in a sketch from our camp near the town.

José's wife and children came to the tent, brought *us* supper, and lucerne for our mules. One of the sons, a fine looking boy of eighteen, volunteered to go with me. José desired that I should let him go, and I had no objection; but when his mother came to ask me if I was not satisfied to take her husband without taking her son and only protector, I referred José and her son to her. She settled the case her own way, and gave me her blessing.

Juaja has a population of about 2,500 inhabitants. I say *about*, because there is no such thing as a census known at this elevation. The houses are built one story, of adobe walls, or of unburnt bricks, and tile roofs. The streets are well paved, and run at right angles with each other. A pretty little white-washed church stands upon the plaza, where the women sell their marketing and say their prayers. The Indians come to market and church at the same time; Sunday morning is the great market day. A drove of horses are most miserable-looking little rats; the horses of the lowlands and coasts are much their superiors.

Men live to a good old age in this climate; 70, 80, and 90 years are common; some have arrived at 120 and 130. I am under the impression that the Indians live longest. Mestizo and Spanish Creole girls have been known to bear children at 8 and 9 years of age.

The Spanish Creole population is small; they are generally shopkeepers, the only dealers in foreign goods, which are retailed to the Indians at enormous profits. They travel to Lima and purchase goods, which they use as an inducement to the Indians to work the silver mines, existing three leagues to the east of Juaja, in the Andes range, but which at present are little worked. The Indians prefer blue, in their dresses, to any other color, and consume considerable quantities of indigo. The demand for wax in the churches is of some account. Eggs and wool are the principal exports to Lima, and are carried over the Cordilleras on the backs of jackasses. Travellers do not know why they meet with so many bad eggs at breakfast in Lima. It is customary to pass them round the country as current money or coin for some time before they are sent to the coast to be eaten. Mrs. José says, three eggs will buy her a glass of brandy, or sixpence worth of anything in market. The carrying trade is superintended by the Indians.

The mestizos are shoemakers, blacksmiths, and saddlers. They seem fond of music and dancing, and assume the pride of a superior, and lord it over the honest Indian.

Our road lies through a rich valley, often four miles wide, and level as a floor. The mountains on both sides are dry and unproductive, except in the ravines. The half-yearly displacement of earth is very great; during the rainy season the mountain torrents come down from the summit loaded with soil. The decrease in the size of the mountains from the time of their creation to the present day, and the filling up of this basin, naturally leads one to wonder, whether the present valley was not once a lake. The Juaja river, which takes its rise in Lake Chinchaycocha to the north of Tarma, flows sluggishly and serpent like through the whole length of the valley, and creeping through the Andes, suddenly rushes off at a rapid rate, as though sensible of its long journey, by the Ucayali and Amazon, to the Atlantic ocean. The bed of the river is half a mile wide, and in the wet season is probably eighteen feet deep. There is very little water in it now. The banks break down perpendicularly. The growth of small trees and flowers gives a fresh appearance to the valley, but the sun is very warm as we pace along the dusty road. The apple trees are about the size of raspberry bushes.

There are few varieties of birds in the valley; some pigeons and doves keep the table pretty well supplied. Little Ignacio takes great interest in the sport, and his sharp eyes are constantly on the look-out for a shot. By the river snipe are found; among the flowers, the humming bird is seen and heard.

The road crosses a number of dry beds, streams of considerable size in the rainy season. There is only water enough, at present, for the washwomen, whose soap-suds spoil the water for our beasts. We pass through the village of San Lorenzo, and the small town of Concepcion. A death-like silence pervades these places; the

people are in the fields, except some creoles, seated among the flowers in their neat little court yards. The streets are narrow, and the houses small. All the towns of the Puna are built pretty much after the same fashion, and of the same material; the only difference in their outward appearance being produced by the cultivation of foliage and flowers, where the soil and climate permit. When this is not the case, the town presents a stupid, uninteresting aspect. Children, dogs, and pigs, earthen pots, and beds of straw, surround a smoking fire on the ground floor of a one-roomed house. The smoke escapes through the door-way; the only opening for light or a change of air. During storms, or at night, the door is closed. One peep inside satisfies the North American he can find no rest *there*. But here, in the valley, the cooking is done under the trees, and the inmates of the house wander out in the shade. We have often noticed expressions of friendship between children and dogs; the latter shows his pleasure by wagging its tail, while the smiling child pulls his ears. The pig is the most restless creature at this height. While by himself, he is seen tossing up the bottom of the valley; when he sees the child and dog together, he gives a corkscrew motion to his tail, jumps and swings his body about with an inviting grunt to play. Before long he is laying on his side, with the child on top of him, while the dog is pawing and snapping at that laughable twist of the tail. The affection the different species of animals have, in these associations, is remarkable. The dog in any other place will sometimes kill and eat the sheep; here, he protects it by night and by day. The pig forms an attachment to the jackass, who leaves it, at this season of the year, for the female of its own kind. The ram becomes intimate with a horse or a bull, and it is with difficulty they can be separated. The lamb follows the Indian girl in direct disobedience of its mother's call. Domestic cats are few. They cannot live on high elevations.

There is no part of Peru which is more densely populated than the valley of Juaja. There, close under the mountains, on the east side stands the town of Ocopa, with its convents and schools. From that place, missionaries have branched off in different directions to the forests in the east, at great risk of life and loss of all its comforts, to teach the savage red man how to change his manners, customs, and belief. Some have succeeded, others have failed, and were murdered or driven back by the battle-axe; their settlements destroyed by fire, and years of labor lost; yet some never tire!

Ignacio carries our tent pole across the pummel of his saddle. His thirsty mule ran between two others, loaded with baggage. The boy was swept off and dropped over the creature's heels in the middle of the stream. He regained his saddle in a short time. His father laughed at him, and took the pole himself.

In the centre of the valley are the remains of an ancient city;

the ruins of stone walls were 12 feet high, and from 1 to 1½ foot thick. Those of the present day are generally adobe, from 3 to 4 feet thick. Some of the buildings have been round; others oblong, but generally square, 12 by 18 feet. The round ones are largest and best situated. The streets very irregular and narrow; no appearance of plaza, or church. The ruins extend half a mile north and south, and 200 yards east and west, on a knoll, which may have been an island before the Inca road was built, now hedged in on both sides with cactus. As the land about this ancient city is now cultivated as a corn-field, no remains of curious things could be found. The mason work is very rough, but remains of mortar are there. How the houses were roofed is doubtful, but by the slanting down on the inner sides of the stones of those houses which were round, the mason work may have been carried up till it met at a point, which would give the house a sugar-loaf shape. Besides door-ways, there were window openings. * * *

Marks of small-pox are seen among the people; but there are no chills and fevers here. Some of the women have dreadful swellings in their necks, called by them "*cota*," or goitre, caused by drinking bad water, or snow-water deprived of salts. But why this disease is generally confined to the women I cannot say, unless the men never drink water. It was very certain, from the noise after church, that they find something stronger. I do not think the people are generally dissipated, except on Sunday afternoons, when both sexes seem disposed to frolic. During the week they are otherwise employed.

Leaving the Juaja valley, we passed through a rough, hilly country. In barley stubbles ewes are giving lambs.

A woman planting beans after the plough, has her baby slung over her shoulders; by the noise it made, I doubt its partiality to beans. The plough is drawn by oxen, yoked by the horns. It is made of two pieces of wood — the handle and coulter are of one piece, into which is jointed the beam; the coulter is shod with a square plate, without a shear, so that the furrow is made by throwing the soil on both sides, like the North Carolina bull-tongue. On a hill some Indians are planting, while others are carrying up water in large jars from a stream for the purpose of irrigating the vegetables peeping out of the ground.

Some of the Indians on the road look very sad after their Sunday frolic. A man on horseback, with his wife astride behind him, and her baby slung to her back, looked quite as uncomfortable as his miserable little horse. The road is marked with stones at every league of three miles: some of the measures must have been made on a Monday morning after a frolic. The small towns of Guayocachi and Nahuinpacyo are inhabited solely by Indians, and have a ruinous appearance. The streets are pasture-grounds, and decayed old houses serve as roosting-places for buzzards. We had

thunder, rain, and hail; the hail-stones as large as peas, and soft, like snow-balls. Lightning flashed all around us in the valley, while the black clouds brought up by the southeast winds were hurried back by a heavy northwest squall. Thermometer 45°. * * *

The llama is pasturing and giving birth to its young close under the perpetual snow line. The alpaca and huanacos — species of the llama—are in numbers also. Llamas occupy the useful position among the aboriginal race of South America, that the camel does to the wandering man in Arabia. These animals carry loads of one hundred pounds, over roads too dangerous for the mule or the ass, and climb mountains difficult for man. They are principally used for conveying silver from the mines. The Indians are very fond of them; though they drive them with a whip, it is seldom used; when one lags behind or lies down on the road, the Indian talks to it, and persuades it to forget its fatigues and get up again. They hang little bells about their graceful necks, and decorate the tips of their ears with bits of colored ribbon. Their disposition, like those of their masters, are gentle and inoffensive, except when too much hurried; then they cast saliva at the Indians, or at each other; this is their only offence; it is thought to be poisonous. They require very little food, which they pick up on the mountains, and are much more temperate than their drivers; they require very little water. Their loads are taken off at mid-day, so that they may feed. I am told that they never eat at night. They seek the cold regions of the Andes; nature has provided them with a warm fleece of wool, and they need no shelter. Though they are feeble animals, their usual daily travel is about 15 miles; but after three or four days journey, they must have rest or they perish on the road. The motion of the head and neck as they cross the mountain crags may be likened to that of the swan, as it floats over smooth water. The wool makes good coarse cloth, of various colors, seldom all of one color. The huanaco is known by its being rather larger than the llama; it is said to be difficult to train, even if taken young. It never gives up its ideas of liberty, and will regain its companions whenever an opportunity admits.

The alpaca is the smallest, with the finest long wool; its body resembles the sheep, with the head and neck of the llama. José tells me they are good to eat, but like the others the meat is not very palatable. The alpaca wool is well known in the markets; the Indians make clothing of it, and trade it off on the coast. In this department, and further south, great numbers of these new world camels are raised. It has been remarked that they seek the south side of the mountains; probably there is less evaporation than on the north side, and the pasture is more fresh and inviting. Barley is generally raised on the north side of the mountain.

The town of Huancavelica has a population of about 8,000, and is situated in a deep ravine, amidst a cluster of lofty peaks. It is the capital of the department, and was named by the Incas. The

ravine runs east and west, with an average width of one mile. A small stream flows through it to the east. Thermal springs, of 82° Fahrenheit, found in the vicinity. The town is divided into two parishes; counts six churches, a hospital, and college for young men, in which physics, chemistry, and mineralogy are taught. The plaza is adorned with a fountain of stone. A cathedral stands by the side of the mountain of Cinnebar, which contains the celebrated quicksilver mines of Santa Barbara. Climbing up this mountain, we came to a door-way 15 feet high and 12 wide, carved in the sand-stone. The entrance on the southwest side of the peak was like a railroad tunnel. The eternal glaciers are at this door-way. Icicles hung overhead, and sheets of ice spread under our feet. Sooty-faced, rough-looking Indians trundled wheelbarrows loaded with quicksilver ore. As the *administrador*, a tall, small-pox-marked mestizo, said to me—We are all ready, sir, to escort you through the mines of Huancavelica—I felt as though he was going to say, to be buried alive. We entered this dark hole, about 600 feet below the top of the mountain. As we left daylight, I thought of home; then I heard a dreadful crash, which the mestizo informed me was the upper part of the mine falling in. A hollow sound was followed by a splash in the deep waters somewhere below; then came suddenly a strong smell of sulphuret of arsenic. A little further on I saw a pair of eyes through the darkness. I called to Richards to hold his torchlight; we were travelling east-northeast by my compass; the eyes belonged to a little Indian boy standing on the side of the mine, with a load of ore on his back, while we passed; he had come through a narrow passage called "Take off your horns," on his hands and knees, and had raised a chocking dust. After refreshing ourselves at a spring of water of 50° temperature, we passed into a plaza, where the market women sell to those men who seldom leave the mines. On one side of this plaza, by holding the torches over our heads, we see a beautiful bridge, and beyond it a stairway leading into utter darkness; on the other side a lake—the opposite shore not in sight, though the sound of a hammer floats over its smooth water. As we move along among red brick-colored columns, which support the immense weight overhead, we see a dim torch by the side of the workman, seated with his hammer and chisel, cutting away and honey combing the Andes. The *administrador* tells me we are half way through; if I wish to climb up stairs, we can get near the peak. Turn which way we will, we find a road to travel. I told him to be pleased to keep as near a level as possible. He halted, and after some words to the Indian guide, he said he had taken the wrong road, and must go back some distance. After bumping our heads, and walking doubled up in a most tiresome position, with great want of fresh air, we finally stood up in the San Rosario church, which is rotundo-shaped, with a height of 100 feet to the ceiling. Over the altar was carved, in solid cinnebar, the

Virgin Mary, with the Infant in her arms. As the Indians pass, with hat in hand, they turn, and, kneeling under their heavy loads of ore, say a short prayer, cross themselves, and pass on by the light always burning at the altar. The laboring Indian, who seldom leaves these dark regions, attends when the church bell calls, and offers up prayer for protection from the danger of the mine. On a Sunday evening, in this rotundo, he meets his countrymen, who work on the opposite side of the lake; they tell of seeing daylight at the point of the chisel overhead, instead of driving it farther towards the bowels of the earth.

After a walk of two hours we came into the fresh air on the north side of the mountain. The Cinnebar is so narrowly separated by layers of sandstone, that the peak may almost be called a solid mass of quicksilver ore. At present there are 120 Indian men, women, and boys employed in extracting the metal. Those who cut out the ore work very much as they please — that is, they cut without compass; this makes it dangerous to those inside, the proper supports being cut away by the ignorant Indian. The ore is carried out at both sides of the peak, in bags of raw hide, slung over the backs of the boys, and then wheeled to the furnaces near by, where men break it up into bits, and women make small cakes of the dust. These cakes are laid in the bottom of a large iron grate, sufficiently open to allow heat to pass, and over them the ore is filled in to the depth of three feet. A fire is made underneath of coarse mountain grass; a strong draught carries the vapor from the heated cinnebar, through a retort of earthen pipes, slipped one into the other, to a distance of five or six feet, where it condenses, and the quicksilver lodges in the floor. After the ore becomes well heated, which generally takes eight or ten hours, the doors of the furnace are closed, and, for three or four hours, the destillation continues. After this the quicksilver is swept into pots, washed in water, and dried, when it is ready for the market, and is sold here at one dollar per pound. It is sent off in all directions to the silver mines of Peru.

By the rude method of mining and smelting, the loss of mercury is great. The joints of the earthen pipes are luted with clay, through which the vapor escapes before it has time to condense. It is difficult to regulate the heat by the dry mountain grass, which blazes up and passes away in a moment, so that the doors must be kept open, and a man constantly feeding the fire.

The mine is owned by the government, and leased to a company, who keep secret its annual yield. The laborers' wages are never more than fifty cents a day. They are supplied by the company with all they require from the shop—a sort of purser's store-room—altogether a profitable business for the company. It often happens that when the day of reckoning comes, the laborer is in debt on the books of his employer; he is then obliged to return to the mine and work.

Cinnebar is said to be found the distance of ten leagues, in all directions, from Santa Barbara, and that the Incas knew of and made use of it. Remains of small ovens, in the shape of retorts, have been discovered. The Indians used it to paint their faces.

The only account found of the annual yield of this celebrated mine

was from 1570 to 1790; during this 220 years, Santa Barbara produced 1,040,469 quintals (100 pounds) of quicksilver, or an average of 47,294 pounds per annum. The price during this period varied from fifty to one hundred dollars per quintal, according to the tariff of prices fixed by the Spanish crown.

Huancavelica is on the inland route between Lima and Cuzco, distant from the former 73 leagues. This, although not the shortest distance to the coast, is yet the best road at the present day, leading to the best seaport. Of this immense mass of cinnebar, not a pound is exported. England finds a market for other quicksilver in the silver mines of Peru; carried in iron jars around Cape Horn at great expense, it is transported on the backs of mules, almost by the very mouth of Santa Barbara. The roads are very narrow and rough; it would be impossible to draw a piece of artillery over them in their present condition; a piano was brought from Lima to Huancavelica, and remains cracked to this time, though the house containing it is the centre of gayety and attraction; the owner expects the music of "The last rose of summer" by the next train of mules. Cargoes arrive from Lima in ten days; mail-boxes, on a mule, travel the distance in six days. To Iça, 50 leagues; cargoes take eight days.

There are no foreigners in Huancavelica. Creole families are few, and the Indian population very poor. Its vegetable productions are raised in this cold ravine; the inhabitants, generally, keep in doors; almost all the Spanish creoles have been to Lima on visits, or educated there, and possess a gay, agreeable manner, and make the cold dreary evenings pass off pleasantly. They have no fires in their houses; as a substitute, they play romping games, and under the exercise keep comfortable until bed time. This was decidedly a merry way of bringing families together, and pleasing to see old folk's romping, like children, with the young people. On one such occasion, a corpulent gentleman had his thumb put out of joint; a pretty girl held the end of it, while others pulled it in place again—by his coat-tails. One of the games is somewhat like "hunt the slipper." All the players stand up in the middle of the room, and carry on to the music of a guitar, violin, or flute. The houses are tolerably well furnished and carpeted. The Indians act the part of servants. They are taken when young, grow up with the children, and frequently remain all their lives in the family; others run away when they become of age, or whenever they are dissatisfied. The Indian girls are often very much attached to their employers, and make cooks and house servants; remarkably neat in their dress, which is not unlike the bloomer style. People wear thick cloth here, even in the house; it is unusual to see ladies without shawls, or gentlemen without cloaks or overcoats. The only fuel known is mountain grass, and dried droppings of llama, like what our hunters call "Buffalo chips."

The desire which we have felt for some two years past to see Lieut. Gibbon's report on the valley of the Amazon is at length gratified, and though the Author's description of that vast region is not calculated to excite emotions of grandeur equal to the subject, yet we feel compensated by his graphic and lively description of all objects which attract

his attention. In his narrative, Lieut. Gibbon has omitted the tedious and uninteresting details which constitute so large a portion of the reports of other officers of our government who have been employed in similar service. He is evidently a man who performs his duty with cheerfulness, taking little account of his labor, while he revels in the enjoyment of every thing calculated to afford rational pleasure. He seems to be in search of objects to excite his wit, and happily he finds them whithersoever he goes. He is just such a companion as we should delight to travel with whether by land or sea.

ARTICLE V.

From Greenough's American Polytechnic Journal.

The Use of Oils in the Arts, and their Sources of Supply.

The use of oils is of very great antiquity. They are frequently mentioned in the sacred writings, and are early shown to be an essential in domestic economy; the oil-bearing fruits and seeds were early cultivated, and, especially with the Egyptians, the mineral ores were well known. The Greeks and Romans were celebrated for the production and use of oils, particularly the flax and the rape; in the latter, nearly every valuable property contained in the olive was found. These oils were employed by them for food, for anointing or lubricating, and for burning in lamps. The Romans, as well as the Greeks, were extensive manufacturers of lamps, especially those in terra-cotta, which they exported to all parts of the then civilized world. They also employed oil as a means of obtaining artificial heat, and they likewise used it for heating baths, for domestic and other purposes, on the same principle that we now employ coal gas. It is evident that they had great difficulty in keeping their olive oil from becoming rancid; and thus rape eventually became more valuable, as its oil could be kept perfectly sweet in the seed and could be drawn at pleasure, independent of the meal of the seed, which also had its value.

It is probable that the Romans introduced the rape-seed, with their lamps, into Britain and other countries. But, however that may be, the rape and flax have flourished in most parts of Europe for many centuries, during which they have supplied artificial light, and served other necessary purposes. About the middle of the past century a great impetus was given to the demand for rape oil, on the introduction of woollen and other manufactures into Britain. Then the steam-engine, as a new motive power, vastly increased its consumption; and, at the close of the century, the cultivation of rape and flax had become so extensive that the landholders and others took alarm, under the erroneous impression that oil growing would so impoverish the soil as to cause wheat and other grain to be thrown out of cultivation, and thus

produce famine. This idea became so general, and the popular feeling ran so high against the introduction of machinery, that every means was adopted to prevent the growth of oil. These discouragements and other obstacles placed in the way soon put a stop to its progress, and at the commencement of the present century it had nearly ceased to be grown. The high price of oils at this period gave a great impetus to the whale fishery, and the introduction of coal-gas materially relieved the pressure on the market. The railway system, and the development of marine steam-power, have produced such an immense demand, that all the various oils and oil-seeds we have been able to import from all parts of the world, have not been equal to the demand. The supply of olive oils is very precarious, and, from the want of science and ordinary care in their manufacture, they have been imported for some years past in a most rancid, decomposed state, injurious to the health of those who use them.

From the high price of oils, it has become a common practice to adulterate them with the cheap mineral or other volatile oils, and by divesting them of their color and smell, it is difficult to detect the adulteration. They are all very inflammable, and such is their volatility that their gases sometimes rise at the ordinary temperature, but, if exposed to greater warmth, they are rapidly disengaged; these gases being so much lighter than the atmosphere, are extremely dangerous, both on ship-board and in a manufactory; for they accumulate in any part not well ventilated, until they become explosive. The tendency to spontaneous combustion in linseed oil is greatly heightened by this mixture. I have known sawdust mixed with it take fire in six hours; oakum or cotton waste in eight hours; and two narrow escapes from fire on ship-board from this same cause. It is not improbable that this circumstance may have had something to do with those lamentable fires which have taken place in factories where oils are largely used, during the past two years. These are the sources from which our machinery is maintained in motion, our lamps made to burn, paints, varnishes, and manufactures supplied, and our cattle fed and fattened.

The consumption of oil, says a well known English writer, has greatly increased in neighboring nations, but they have increased their cultivation in the same ratio. This increased growth of oil has produced much larger supplies of oil cake, which has been turned to a most profitable account by the Dutch, who have taken to breeding, feeding, and improving their cattle for the British market. France and Belgium, in like manner, have greatly increased their stock, and it is from this large supply of valuable food that they are now successfully competing with Holland in butters, also for the English market. It is from this cultivation of oil that these countries were enabled to export into the United Kingdom during the past year, 94,548 oxen, bulls and cows, 302,882 sheep and calves, upwards of 10,000 horses, 300,000 hundred weights of butter, and 13,000 tons of oil, besides cheese and various other agricultural products. The importations for the first four months of the present year stand thus; oxen, bulls, and cows, 13,700; sheep and calves, 26,000; butter, 137,287 cwt.; oil, 5,000 tons. Holland has always been proverbial for the cultivation of oil-seeds, and it is mainly from this cause that the Dutch farmers are now the most prosperous agriculturists to be found in Europe.

The rape is a hardy plant, and will grow in almost any climate, but requires attention and care. In India, Russia, and some other countries, it is grown in a half-cultivated or wild state, is sown in the spring and reaped in the autumn. The seeds from these plants are small, and are of a hot character, but capable of being brought to great perfection. I planted one of the East Indian seeds, and it arrived at maturity when about twenty inches out of the ground, with five small branches of pods. By care and management I have brought the produce of this seed, in this, the fourth year, to a plant, five feet six inches high, with fifty large branches of pods. The plant, as grown in Holland and England, is sown early in the autumn; when it puts out large leaves, from twenty to thirty inches long, and when it arrives at maturity these contribute their gaseous and sappy matter to the formation of a short stalk, which ultimately results in a bulbulous head; in this state it lives through the winter. In the spring it expands upwards, throwing out branches at intervals of from six to seven feet in height. It is harvested early in July. The seed is sometimes sown on one plot of land, and the young shoots transplanted in the spring. At other times it is sown in the field, where it is intended to form the crop. It averages five quarters to the acre, and by management may be made to produce much more. This crop is subject to the attack of the turnip-fly and slugs. When young and when in flower, a small beetle lays its minute larvæ in the petals, ultimately furnishing the pod with a maggot, which, forcing open the pod when nearly ripe, causes the seed to fall out. But, with all these drawbacks, it is everywhere acknowledged to be the most profitable crop grown, and the most abundant crops of wheat succeed it in rotation. In Holland its rotation is every fifth year. The straw is valuable as litter and manure. In some parts of Germany the straw is burnt, and the ashes eagerly sought after for fancy soap manufacture. From the beautiful white silvery appearance of this straw, and its fibrous character, it is possible it might be more profitably employed.

The flax plant needs but little explanation; it is everywhere cultivated for the fibre of its straw, without reference to the value of its seed. In England, Ireland, and other parts, it is frequently drawn before it comes to seed, and it is only in Holland where the seed is allowed to develop itself; but, even there, not fully, as there is a prevailing opinion that to develop the seed would injure the fibre of the straw. This idea I believe to be perfectly erroneous. The Dutch also import Riga seed for sowing, on the score of economy, their own produce being much more valuable. Russia is not a natural climate for the flax, and there is not a shadow of science displayed in its cultivation; therefore, we cannot possibly form any conception what the flax plant might be brought to, or what its products really should be. The fibre of the straw, as well as the oil in the seed, are substances formed from the gases of the atmosphere, and it will be found, the larger the development and vigor of the plant to absorb those gases, the greater will be the perfection of the products. Egypt would appear to be the natural soil of the flax, for we read that Pharaoh arrayed Joseph in fine linen; Solomon also purchased linen yarn in Egypt, (2 Chronicles, 1 and 16,) and Herodotus mentions that Egypt was the great emporium for the flax trade. It appears to me that the

Egyptian seed of the present day, although in nearly a wild state, is capable of being brought more readily into a high state of cultivation than the seeds of any other country except those of China.

The importance of a suitable oil or substance for the lubrication of mechanism, is one of great magnitude. All pieces of mechanism, the works of man, are nothing less than inanimate bodies, imitations of the works of the great Creator, as displayed in the animate creation; and it is daily proved by practical experience, the nearer the imitation of the one to the other, the nearer perfection is arrived at. Nature supplies all animate bodies with a lubricating oil, (synovia,) which forms the separating medium between the solid parts of the joints; likewise, all the internal passages of the body are furnished with a like substance, to facilitate the motion of solids and fluids; and the external parts, or outer covering of animals, are furnished with the same oily substance, in quantity and quality according to the density of the element in which they are intended to move, and the velocity they are designed to maintain. Marine animals are striking instances of this. Thus, every animate being possesses the fullest facility of motion, with the least muscular exertion; thus, all mechanism designed for motion must be governed by the same laws, and its economy can only be maintained on the same principles of giving facility to motion, which can only be done by the purity and chemical properties contained in the oil or substance employed for lubrication. This theory is most beautifully developed in that class of mechanism connected with the cotton manufacture. The competition to which this manufacture has been subject, has brought an amount of science to bear upon its economy, that is not to be met with in any other class. Science has brought every portion of the mechanism of the cotton-mill under the strict laws of motion and force, and the most scrutinizing tests are employed for ascertaining the facility, or the retarding influence any new oil may offer, previous to its application. By this course of study, such an immense amount of motion is obtained from a given power, and with a wearing of the parts so immeasurably small, that it can only be equalled by motion in the natural body. The power of force necessary to give to the spindle a revolution of three thousand per minute, is so infinitely small that it can scarcely be calculated. With the vast number of separate bodies in motion, some of them travelling at great velocities, the freedom from accidents, and the security to life and property in those establishments, is surprising. Cotton manufacturers consume the largest proportion of the pure sperm oil imported for which they pay a high price; a matter, however, of secondary importance, when the increase of power thereby produced is taken into consideration. This is the only class of mechanism upon which artificial power has been properly developed, with the exception, perhaps, of private carriages, where the power of the horse has been greatly economized, by the use of patent axles, giving stability and facility of motion, and preventing the destructive influence of oscillation; thus, lighter carriages and cattle are employed, and the speed has been increased, with greater security and at less cost. It is now considered economical to purchase the most expensive oils for the axles even of town carts. Railway and marine machinery suffer greatly from friction, and its inseparable companion, oscillation. The laws that govern motion in the

manufactory are precisely those which ought to govern motion on the rail, but these two great interests manage their mechanism on precisely opposi e principles; hence the economy of the one, and the expensive character of the other. The difference appears to be, that the factory is worked with a view to individual profit, the other for that of a company. The ear of one is ever keenly open to the discoveries of science, the other is ever closed. except it happens to flow through certain favored channels. However, a new era appears to be dawning upon railway machinery, as two or three of the leading English railway companies have accepted the offer of some of their engine-drivers to work by contract. If this plan should be liberally carried out by the companies, it will be the first step towards the development of locomotive steam power. The personal interest and responsibility will ultimately work as great changes on the rail as the manufacturer has accomplished in his mill, and will lead to the same principles being carried out in both classes of mechanism. When that is accomplished, it is impossible to say at what speed it may not be perfectly safe to travel, and how much the cost may be reduced. The same remarks are applicable to marine machinery, and if the substances employed as lubricating materials by the large Steam Shipping Companies, and even by the Admiralty, were tested, it would be found difficult to meet with substances offering greater resistance, and, in other respects, more chemically unfitted for the purposes to which they are applied. The purity of the oil supplied to the marine engine is of great importance. The large bearing surfaces exposed to friction, and the nature of the metallic alloys of which they are composed, (copper, zinc, and tin,) render them susceptible of electrical influence, and that influence once exerted, is always liable to a repetition, producing heat, expansion, and all the consequences resulting therefrom. If this subject were better understood by the companies, or some personal interest brought to bear upon the development of marine power, it would lead to much greater economy in its working, and add much to the speed of the ship. A better knowledge of the science of lubrication might also lead to the idea of lubricating the ships themselves, after the manner of marine animals. If that could be accomplished, the velocity of ships might be much increased. It is quite certain, from the great necessity of economizing steam power, that companies and individuals employing it must, sooner or later, employ better lubricating materials; their own interests will force it upon them. But the great question is, where are they to be had.

The subject of artificial light is one of considerable importance; our oils are not so pure as those of the French and other nations, but they are much more expensive. The British rape would supply this deficiency, as, from the purity of its gases, it produces the most brilliant light, and is also capable, by an inexpensive and simple process, of being converted into gas, and employed in the ordinary way. Such is the purity of this gas, that 450 cubic feet is equal to 1000 cubic feet of coal gas, and it may be made applicable to the house, the ship, or the railway train.

It is impossible to say to what extent the value of the flax-seed may be increased by improved cultivation, the oil forming the most important ingredient in the manufacture of paints, varnishes, &c.; but

from the impoverished and adulterated seeds from which it is obtained, our external painting possesses no body or durability: it is very inferior to that of France and Holland. It is also a well-known fact, that artists have for some years been obliged to abandon the use of this oil, from its impurity and impoverished character, and adopt others of lighter body, of the durability of which we have but little knowledge. The paints employed by the ancients and others, down to the beginning of the present century, were of a very different character to those employed at the present time. The mealy part of these two seeds, in which the oil is contained, have ever been considered important articles, (after the oil is abstracted,) from the peculiar properties they possess. The flax is rich in gluten, and the rape in azote. It is well known that the flesh and muscles of animals are greatly increased by food containing azote, and their fat is derived from those containing gluten. The flax meal, when mixed with water, forms a strong jelly, having so great an affinity for oil that it will absorb three or four times its weight without the appearance of oil being present. It is quite tasteless; thus, the ancients mixed olive or rape oil with water, wine, or aromatic essences, and employed it as food for medicinal purposes, and for anointing the body, &c., &c. The Jews employed oil and wine medicinally, and had a variety of rules for mixing it; rape oil, mixed in this way, is eaten as food by the Russians at the present day. Whatever effect this food might have upon man, it certainly has an extraordinary effect upon animals, as it rapidly increases their size and weight. When applied for anointing the body it is largely absorbed by the skin, expanding the muscular fibres, and producing an agreeable elasticity and softness. For anointing the feet it is quite a luxury. It is used in Europe, in some parts, for extracting the oil from woollens, instead of soap. Its affinity for uniting with animal matter is very striking, and, on the other hand, when mixed with the oil of its own seed, its affinity for uniting with vegetable bodies is equally apparent. The meal of the rape possesses the same affinity for uniting with oil and water, but is destitute of the gluten. It is, like the oil, rich in azote. The Dutch farmers have discovered the value of these properties and are now giving their cattle these two meals mixed with water; the more scientific frequently add the rape oil; the effect of this food upon horses is very striking. It is also a fact long known, that men employed in factories where rape oil has been largely used, soon acquire muscular strength and vigor, and are freed from pulmonary and cutaneous disorders. I find also in the engine-room of steam-ships, that the men are more healthy when rape oil is used, then when olive or sperm oil is used. There is another most important fact in connection with this description of food — the excrement or manure from cattle fed upon it possesses high fertilizing properties. I have the opinion of some very practical and skillful agriculturalists in Belgium and Holland, who state that they prefer the manure of cattle liberally fed upon this food to guano; they consider it more congenial to the nature of the soil, and more lasting in its effect. Those farmers who grow the rape, generally stipulate, when selling the seed, for the return of the cake; by this means, exportation is partly prevented.

It is well worthy the attention of our farmers to investigate the properties and relative values of the oleaginous plants, and still fur

ther extend their culture, which would, no doubt, prove highly beneficial, particularly as there are renewed efforts now making to introduce the more extended manufacture of linen into this country.

Among the numerous palms that have produced oils, we may mention one that has, till lately, attracted but little attention, the CAHOUN of Honduras. This tree is found alone in the region of Central America; it is a true palm, being in appearance similar to the Cocoa-nut tree; the branches are precisely the same in structure, but spread more, and not so high, and the trunk is considerably thicker. The order and regularity in which they grow are surprising. Rows of them, which presented the appearance of having been planted with the greatest care, closely resembled the nave and aisles of a cathedral, the arched branches meeting overhead and producing an exact imitation of the vaulted roofs; and, if the sun were declining, the horizontal rays shining at intervals through the sides of the avenue, created the splendid effulgence of the most richly painted windows.

This tree bears a nut about the size of a large hen's egg, which grows in huge clusters, each cluster resembling a bunch of grapes. The kernel tastes a little like that of the cocoa-nut, but it is far more oleginous, and the oil which is extracted from it is infinitely superior. No other oil is burnt in Honduras but the cahoun and the cocoa-nut oil; but a pint of the former will last double the time that the same quantity of the latter will. This oil (the cahoun) congeals at a temperature of 75 degrees.

The country of Honduras consists principally of two kinds of land; the one is called a "Pine Ridge," and the other a "Cahoun Ridge." The former is a sterile, sandy soil for the most part, but contains here and there patches of great fertility. These "green spots" in the midst of this sandy wilderness are the resort of immense herds of deer and antelopes, the flesh of which bears not the least resemblance to the succulent, well-fed venison of this country, but is dry, white, stringy, and an utter stranger to fat. The only way to make it eatable, is to disguise its real nature, and dress it as veal, for which meat, after a long absence from it, it is a tolerable substitute. The pine ridge is covered with innumerable red pines, which are very much more resinous than the red pine of America. From these trees any quantity of pitch, of an excellent quality, might be extracted. This would also be a very valuable article of commerce.

The Cahoun Ridge differs materially from the Pine Ridge. The soil of the latter, as I have said, is sandy and unproductive; whereas, that of the former is rich and loamy, and possesses every agricultural capability. There is no tree, plant, fruit, nor root, which is produced in the tropics, which cannot be grown in great abundance upon these ridges. The Cahoun trees here abound. For miles and miles you have nothing but forests of them; and yet, with all these forests of trees, bearing nuts from which a most valuable oil can be extracted, for which oil a ready market would be obtained in every town in Europe and the United States, no one has yet been found—whether from a want of energy and enterprise, or from pre-occupation in other pursuits I am not able to say—to turn them to a profitable account. No one single bottle of oil has ever been exported to Europe, or elsewhere, as an article of commerce. Over these vast fields of wealth

a few old negro women occasionally wander, picking up the nuts which have fallen accidentally to the ground. from which, in their rude and clumsy way, they manufacture as much oil, and no more. as will satisfy their personal wants, and purchase for them a few *luxuries* in the shape of pickled pork and gin, pipes, and tobacco.

These Cahoun trees yield one crop every year; this crop consists of generally three and sometimes four, bunches of nuts, as close together as grapes; the nuts are of the size of a small turkey's egg, and on an average there are eight hundred nuts in one bunch.

The people here extract oil from them in the following manner:—When the nuts are what they term full, they break, between two stones, the shell, which is very hard, then pound the kernel in a wooden mortar; the sediment is then put in a boiler with water, and boiled down until all the oil or fat floats; they skim the oil off, fry it in an iron pot, so as to disengage all the aqueous particles, and then bottle it; by this simple process, the average yield is one quart bottle of oil out of one hundred nuts.

With improved machinery, more oil can be extracted, and if any one with some capital, having a ready market for his produce, would undertake such a manufactory, there is no doubt that the staple article, say nuts, will not be found wanting; there would always be an abundant supply on hand, because the women and children who live along the banks of the rivers, having nothing else to do during the dry season, and being certain of a trifling remuneration, would vie with one another to bring to such an establishment the produce of their labor, which only consists in picking up and gathering the nuts.

DEPARTMENT OF PUBLIC IMPROVEMENT.

Iron Mountain Railroad.

ANNUAL REPORT.

To the Stockholders of the St. Louis and Iron Mountain Railroad Company:

The Board of Directors, in conformity with provisions of the charter of said company, respectfully submit the following report of the operations and conditions thereof:

At the date of our last report, November, 1853, the construction of the road bed from St. Louis to the Meramac river, had been let to Messrs. Holmes & Co., and shortly after, a section of some six miles below Mrs. Waters', extending west about two miles beyond Dunklin's, (at which point the road leaves the Mississippi river,) was let to the same parties. They commenced work and prosecuted it with vigor during the winter and spring. A contract was also closed with Messrs Conran and Bennett for the bridge masonry at Meramac river, and with Messrs. Brown & Co., for the pile work necessary for foundations, but not in time for any

thing of consequence to be done before the spring and summer flood. These contracts were based upon cash payments by the company as the work progressed. Afterwards, on the 28th day of February, 1854, the proposition of Messrs. Wm. M. & Charles N. Watts, and W. M. Roberts, of Pennsylvania, was accepted, and a contract entered into with them for the graduation, masonry, bridges, ties and track laying of the entire line from St. Louis to the Pilot Knob, (excepting the work already let,) payment to be made in the bonds of the city and county of St. Louis, and of the State of Missouri at par, five per cent. being added to the schedules of monthly estimates, and an additional five per cent. on the total estimates of the work to be paid them in stock at a bonus, should the whole work be completed in contract time, viz: from St. Louis to Big River (forty-seven miles) by first July, 1856, and through to Pilot Knob by first December, 1856, the company furnishing the rails, chairs and spikes six months in advance of those periods. The prices per yard for earth excavation, rock work, masonry, ties, &c., were considered reasonable by the Engineer, and are in fact less than have since been paid by other roads in the State, now under construction. Messrs. Watts & Co. had also the privilege of making an arrangement with Holmes & Co., by which said Watts & Co. might also take the work let to Holmes, on the same conditions as the rest of the line, which they have done, thus becoming responsible for the whole work, except the Meramac bridge and a small section of graduation adjacent, and the graduation through the lands of Messrs. Kayser and others, between the Arsenal and Carondelet, which was reserved to them in settlement of land damages.

Messrs Watts and Roberts have sub-let the work on all the sections throughout the line, except between the Iron Mountain and Knob, about six miles, and they expect to sub-let this portion to a party now examining the grounds, in a few days.

Their contractors are mostly men of experience in railroad work, known to Mr. Roberts (in charge as Chief Engineer of the Allegheny Valley railroad, Pa.,) as such, and from the manner in which they are generally taking hold and making preparations, the directors have reason to believe will not be deterred by any ordinary obstacles from urging their work to completion. The grubbing and clearing is done on the large portions of the line, and the excavations both in earth and rock cuts is commenced at nearly all of the most difficult points. Owing, however, to the heat of the summer, the death of some of the sub-contractors, and sickness amongst the operatives, together with the difficulty of negociating the securities at fair prices, comparatively little has yet been done. In view, however, of the high prices that have ruled for labor, and the low figures realized for securities, the directors have not deemed it advisable, to urge the contractors to greater efforts.

They are now fully prepared to go on as rapidly as may be desired, and as the price of labor is coming down, no further delay is anticipated, should the prices of our bonds justify pushing the work.

Upon this depends its ultimate success; and it is evidently better policy (however anxious we may be to complete the road at an early day) to work slowly and wait patiently, whilst the securities are greatly depressed, rather than to force the contractors to sacrifice them at ruinous rates, thus breaking them down and wasting our own resources. Our means being, in the best possible view of the case, considerably short of the amount requisite to put the road in operation, no argument is needed to show that the company cannot afford, in the very beginning of the enterprize, recklessly to waste them.

The subscriptions to the stock of the company are as follows:

County of St. Louis, payable in bonds,			$500,000 00
City of St. Louis,	do	do	500,000 00
City of Carondelet,	do	do	50,000 00
Am. I. Mountain Co.,	do	do	25,000 00
Am. I. Mountain Co., payable in cash,			50,000 00
Madison Iron and Mining Co.,		do	50,000 00
County of Washington,		do	75,000 00
Contractors,		do	80,000 00
Individual stockholders,		do	212,300 00
Making a total of subscription of			$1,492,300 00
To which add State credit			750,000 00
And the sum of			$3,242,300 00

appears, as the amount of means at the disposal of the Directors, counting the bonded securities at par value. The revised estimate of Engineers, as per report herewith submitted, makes the cost of the road, finished complete to the Pilot Knob, including rolling stock, depots, land damages, interest, engineering, office expenses and contingencies, $4,100,000, leaving a deficit of nearly two millions of dollars to be otherwise provided. A part of this amount can, however, be dispensed with for a time, by making temporary depot buildings, and reducing the allowance for rolling stock to a bare sufficiency to start with, leaving the residue to be added as the business of the road requires it. To raise this amount on the construction bonds of the company, as originally contemplated, would, in the present condition of the market for railroad securities, be utterly impracticable.

But we rely upon the aid of the Legislature to place our road on an equal footing with the other great trunk roads of the State. The $750,000 State credit we have was granted for a branch road from the Pacific Road to the Iron Mountain, about sixty miles in length, and transferred to the direct road on the failure of that

company to commence construction within the prescribed time. Our road *direct*, is eighty-six miles long from Hazel street to the Pilot Knob, and counting its entire length, to the State line of Arkansas, about 210, or nearly the same as the North Missouri, and but eighty miles shorter than the Pacific to Kansas. Looking to its vast importance to the State, not only as a local road, opening up a communication between St. Louis, the terminus of the other great trunk roads, and the iron and lead regions of Washington, St. Francois and Madison counties, but also as a link in the great Mississippi Valley Railroad, giving connections with Cairo, New Madrid, Memphis, Helena, Little Rock, and by the improvements already in progress east of the Mississippi, with Nashville, New Orleans, Mobile and Charleston, we may certainly expect for this equal favor with any other road, at the hands of the Legislature.

To put us on a like footing with the North Missouri, we should have 1,250,000 additional State credit, with the help of which St. Louis herself may and should be relied on to furnish the balance of the means necessary.

It is not considered necessary to enlarge upon the vital necessity to St. Louis of the Iron Mountain Railroad. But one opinion prevails amongst our citizens on that subject. It *must* be built. And that it will be a paying road when completed, if due regard is had to economy in its construction and management, there cannot be a doubt. It will commence with a mineral and lumber business almost or quite sufficient to sustain it, without having to wait for the settling and improvement of the country, consequent upon the building of the road itself, and the thousand new sources of trade thus opened up, which it is impossible with any degree of certainty to estimate, or even form a conception of at present.

Reference is had to Engineer's Report submitted herewith, for estimates of business, and full details as to location, progress of construction and other matters connected with the road, which, as it is very comprehensive, it is hoped will prove satisfactory to the stockholders, and also when published, to the general public.

Most of the land necessary for the road-bed has been acquired by the company, and the cases remaining where the private proprietors have not yet relinquished, are in progress of adjustment by legal condemnation. The cost of this item (land damages,) has been much greater than was anticipated, but was unavoidable under the circumstances, and will not probably exceed in the aggregate the estimate made by the engineers for the entire line; of which, however, far the larger part has been incurred in the first six miles in leaving the city, and getting through Carondelet. The bill introduced in the present Congress to relieve the company from the onerous restrictions imposed on the grant of way through the Arsenal, Marine Hospital and Jefferson Barracks tracts, passed

the House of Representatives and also the Senate, with an immaterial amendment; but not being again reached in the House, requires the further action of that body at the ensuing session before it becomes a law. No doubt exists that it will pass without further serious opposition. The company have also acquired lands for two depots in the city of Carondelet—one in the lower part of the city, in block 66, with a river front, sold to the company for a nominal consideration, by Messrs. Carline & Erskine; and another, (block 21,) in the centre, purchased of Mr. Tilman. Negotiations are also on foot to purchase a suitable site for a station in the northern part. The company own a lot purchased of Messrs. Blair, in block 6, northward, (as the cheapest mode of getting right of way through the ground,) which may be made available for this purpose, or exchanged for a more suitable one, a few blocks further south.

The city of St. Louis have given the Company the right of way up Main street, as far as Hazle street, for the consideration of ten thousand dollars, (to be expended in grading the street, which will be, in fact, making the road bed,) and have also sold to the Company a large block of ground, say four hundred feet square, to be selected, between Main street and the Wharf, for the purpose of a Depot, for the very reosonable price of $5,000. This block has not yet been selected, for the very reason that arrangements must be made for more land, to answer the purpose of the company, adjacent to that which may be obtained from the city. Four acres of land on the line of the road, immediately south of the Arsenal wall, have also been obtained from the Messrs. Papin, for the purpose of a machine (repair) shop, and which may also be used as a temporary stopping place for trains until the regular depot ground near the centre of the city can be made available, as this lot needs but little filling or grading.

No arrangement has yet been made for the purchase of rails. The price has been so high, and still is, that it was not deemed advisable to purchase a year or more before it is wanted, even had the means been at hand, and in the condition of the fiscal affairs of the Company, it could not be done on favorable terms at any rate. There is time enough yet, and it is reasonable to hope that some months hence the supply and demand for this important article will be more evenly balanced, and a reduction in price will take place. A contract for three locomotives has been made with Messrs. Palm and Robertson, of our own city, to be ready as soon as they will be required, either on constructions or starting a passenger train to Carondelet or Jefferson Barracks. It was necessary to provide for these in advance, as the shops usually have orders many months ahead, and considerable time is required in building engines after they are ordered.

In regard to finishing at once a portion of the road, say as far as Carondelet, and placing an omnibus train upon it, both for the

accommodation of the public and for the purpose of giving confidence to the stockholders, that something is actually doing, the Directors would say that, in their opinion, the benefit proposed to be gained did not justify any greatly increased expense to accomplish the object; and in making a settlement on the best terms possible with Messrs. Kayser and others for right of way, the construction of the road-bed over their property was let to them, and such time allowed them for its completion as would give them the benefit of the deposit from two summer floods. The death of one of Messrs. Watts' contractors, on the section below Messrs. Kaysers', has also delayed operations on this part of the line. The work, however, is not heavy, and it can be fully prepared for the rails in a few months, if circumstances should seem to demand that this part of the work should be pressed forward to completion.

The annual statement of the Treasurer is hereto annexed, and made part of this report, from which it will be seen that the total amount collected from stock subscriptions to date, in cash and bonds, is $445,170, viz:

In bonds of the city and county of St. Louis		$325,000 00
Bonds city of Carondelet		25,000 00
In cash from subscribers		95,170 00
To which add prod. of bills payable	19,391 59	
For instalment of the State bonds	50,000 00	69,391 59
And the total receipts in cash and bonds are		$514,561 59
Of which there has been paid out:		
For construction, in cash		28,951 61
In bonds of the State	25,000 00	
In bonds of the city and county of St. Louis	46,000 00	71,000 00
Together		$99,951 61
For engineering, cash		43,822 27
For contingencies and office expenses, including salaries of President, Secretary, Treasurer and Counsellor		10,443 09
For land and damages, for right of way		10,742 70
For real estate		20,177 10
For interest		948 63
For fencing		30 00
Making disbursements		186,115 40
Balance		$328,446 10
On hand, city and county bonds	279,000 00	
Carondelet bonds	25,000 00	
State bonds	25,000 00	
	$329,000 00	
Overdrawn on Treas. in cash, diff.		553 31
		$329,000 00

From this exhibit it will be seen that a comparatively small amount has been paid of the calls made by the Directors on stock subscriptions, in cash. The instalments called for on old stock amount, in the aggregate, to 55 per cent., exclusive of the 10 per cent. due 15th December, 20 per cent. having been called from recent subscribers, payable at the same time. The Directors have been very unwilling to resort to legal measures to coerce payment from those in default. But if they are to comply with the contracts entered into for the construction of the road—if the road so much desired by all is to be completed, and the advantages of a connection with the greatest mineral region in the world realized, they will have to require the punctual payment of instalments, as called, and insist upon all arrearages being paid into the Treasury without delay, and the Board have given notice to delinquent stockholders accordingly.

All which, on the part of the Board of Directors, is respectfully submitted by

L. M. KENNETT, President.

Hannibal and St. Joseph Railroad.

PRESIDENT'S REPORT.

Public works, for whatever purpose constructed, are monuments which attest the genius and commemorate the objects which impel a people to unite in social action. Hence an account of the origin, progress and nature of public enterprises constitutes an instructive and interesting portion of a nation's history. The mind, prone to associate all objects with the intelligence which brought them into existence, when contemplating these monuments of human labor, desires to know something of the individuals by whom they were conceived and accomplished. We are, therefore, pleased to find that the President of the Hannibal and St. Joseph Railroad has embraced in the following report a history of its origin and of his own connection with that great work.

Owing to causes familiar to the public Economist, all public improvements calculated to facilitate commerce, and change the existing relations between producers and consumers, meet with uncompromising opposition from a portion of the community for whose benefit they are designed. He that would change the industrial pursuits and commercial relations of a people by means

of a great public work, is regarded by many in a light similar to that in which the loyal subject regards one who aims to revolutionize the government of the country. And to ensure the accomplishment of his designs, the former should possess the elements of heroism in as high a degree as the latter.

We admire the self-sacrificing spirit, indomitable perseverance, and tact exhibited by the President of the Hannibal & St. Joseph Railroad in reference to the consummation of that enterprise, and rejoice to find that the completion of the work within a reasonable period is regarded as a certain event. We should have been better pleased, could a larger portion of the stock have been owned by citizens of our own State, but they having refused to subscribe, we are persuaded from such facts as have come to our knowledge, that the Directory were fully justified in disposing of the stock to non-residents.

PRESIDENT'S REPORT.

To the Stockholders of the
Hannibal & St. Joseph R. R. Co.

GENTLEMEN:

In compliance with the provisions of the charter, I proceed to lay before you, on behalf of the Directors, a statement of the present condition and affairs of the Hannibal & St. Joseph Railroad Company.

In connection with this statement will also be found such remarks and explanations as are deemed necessary, not only to place our great enterprize, and its present favourable condition, fairly before the country, but to vindicate its original friends—its constant and disinterested advocates and supporters—from the ungenerous and unwarrantable assaults that have been made upon them, by the uninformed or designing, at every step of its progress.

It will be proper here to remark, that a true report of the condition of the company has been presented at every meeting of the Stockholders—a report dictated by the friends, and not by, nor for, the enemies of the road.

Since, however, the motives of the Directors, and of the President in particular, have been impugned and severely commented upon, for withholding, as is alleged, the proper information from the public, I may be pardoned for prefacing the account of the present condition of our road with a condensed statement of its early history.

During the session of the Legislature of 1846—7, a discussion originated in the Senate (of which I was a member,) upon a proposition to repeal an act dividing the proceeds of the sales of five

hundred thousand acres of land, which Congress had donated to the State of Missouri for general objects of internal improvements, to wit: Railroads, &c., among the counties, share and share alike, without reference to the general objects for which said lands were granted. This discussion, which was an exciting one, and which occupied much of the time of the entire session aroused a spirit in favor of internal improvement, which has since prevailed throughout the State.

During that session I had the honor of offering a resolution instructing the Committee of Internal Improvements to enquire into, and report upon, the expediency and practicability of a Railroad from Hannibal to St. Joseph. The committee reported a bill, which among other things appropriated one hundred and ninety thousand dollars to the survey and commencement of the road. This bill passed the Senate, but was laid upon the table in the House of Representatives "until the close of the Mexican war." I then offered the following Bills which likewise passed the Senate, but met with a similar fate in the other end of the capitol—First, a Bill postponing the operation of the Distribution Act until the end of the next General Assembly. Also, a Bill giving six years to the pre-emptors who held these five hundred thousand acres of land under the State in which to make their payments, the whole to be paid in three equal instalments.

These Bills were intended to save the internal improvement fund from being squandered, until the people could send up Representatives instructed as to its appropriation. As an evidence of the spirit existing at that time, I will state that petitions were circulated along the whole line of the road, and numerously signed, remonstrating against the action of the friends of the measure in the Legislature. After the failure of the Bills above mentioned, I then submitted and obtained the present charter.

We were thus left with the naked charter, without any aid either from the Legislature or the people, even to test the practicability of the route by the necessary preliminary surveys, with the opinion prevailing almost universally in the public mind, that the scheme was visionary and impracticable, and if practicable pregnant with certain injury to the State.

Under these circumstances, a sufficient amount of stock could not be obtained to organize a company under the provisions of the charter—it requiring the actual construction of the road to be commenced within three years from the date of its passage.

At the session of the Legislature of 1848–1849, by which the charters for the Pacific and other railroads were granted, there was no company organized for building the Hannibal and St. Joseph railroad, no stock worthy of notice taken, and great probability existing of the charter being forfeited before another session in consequence of the work not being commenced within the time prescribed.

With a view to the preservation of the charter, I then procured the passage of a Bill extending the time for commencing the work to four years from the passage of the act, and also made an effort to procure the aid of the State to the amount of five thousand dollars, to test the practicability of the route. This aid could not be obtained except upon condition that Congress should first give alternate sections of land for a width of six miles on each side of the road, and the State be entitled to stock in the road to the amount of the appropriation.

I also procured the passage of a Bill in the Senate providing for a special election, one year in advance of the general election, giving the people an opportunity to decide at the polls between the application of the public improvement fund to general or local objects of internal improvement. This Bill, which was intended to elicit discussions and create an interest throughout the State, and thus procure means to preserve the railroad charters, was defeated in the House of Representatives.

Thus at the end of that session also, no company had been organized, no aid given, nor a sufficient amount of stock taken, to justify the belief that a company with adequate capital ever could be organized. With the novelty of the project, the interest in it had also vanished, and a feeling of disgust had taken the place of curiosity. The bare mention of a subject, upon which so much had been said and so little done during a period of four years, had become irksome, and even offensive, to the people. A natural inclination to depreciate the efforts of others, and to exult over their defeat, led many not only to look upon, but treat the advocates of the measure with contempt and ridicule.

Under this aspect of affairs, what was to be done?—was this magnificent project to be abandoned, and its advocates left to receive their reward in the depreciated stock of what would in that event have beeh designated an exploded humbug?—or were they to make one more effort to succeed? It occurred to me that the magnitude of the object would justify the attempt. It was therefore made:—with what success the following facts will show.

Upon consultation with some who are members of the present Board, I started a subscription to raise money to defray the expense of a preliminary survey, to test the practicability of a railroad from Hannibal to St. Joseph. With this paper in my pocket —at my own expense—a hopeless invalid, on crutches, accompanied by the jeers of some, and the warm sympathy and hearty co-operation of others, I commenced traversing the country from the Missouri to the Mississippi tc procure means to carry out the object. The necessary instruments were procured upon my own responsibility. Having received assurances of aid, I left subscription papers at various points along the line on my return to St. Joseph. Immediately a corps of public spirited engineers was organized, and took the field under the direction of M. F. Tiernin,

Esq., as chief engineer. For the entire outfit and expenses of this party, including the pay of twenty men, I was held personally responsible. This first survey of the Hannibal and St. Joseph railroad was completed in eighty days, and to it we are debtor this day for whatever of pride or profit may accrue to us from its ultimate completion. For this survey saved the road by awakening an interest in the public mind, thereby enabling its friends to raise a sufficient amount of stock to save the charter by the organization of a company in accordance with the provisions of the law.

Although the entire line was canvassed several times from end to end, through every kind of exposure and opposition, and notwithstanding the liberality manifested and extended to the work on several portions of the line, the amount raised by subscription was totally insufficient to defray the expense of the survey.

The success which attended our efforts kindled a laudable spirit of emulation in the minds of our friends of the Pacific road, and it is highly gratifying to know that our humble efiorts, though not fully appreciated at home at the time, were thought worthy of example by the President and Directors of that great enterprise. In the speech of Mr. Allen to the citizens of St. Louis, reference is made to the fact of our survey having been made, and assuming it as a fixed fact that our road would be built, an appeal was made to their public spirit and their local interest to follow our example. It was followed; and the two roads were soon placed in a condition which justified the Governor in recommending the credit of the State to be given to them to the exclusion of all others, alledging as a reason for so doing, the amount of stock that had been secured, and the energy and public spirit manifested by their friends.

Thus approved by the Governor, by means of the efficient cooperation of the President and friends of the Pacific road, with the friends of our own road, in the Legislature, the credit of the State was obtained for both. And by the same cordial co-operation, together with the energy and skill manifested on the part of the members of Congress from Missouri, the land grant was obtained to aid the State in the construction of these two railroads; and subsequently, by an act of the Legislature, a portion of those lands was applied to aid in the construction of our road.

From these beginnings, the spirit of railroad enterprise has become general throughout the State. Is it, then, too much to say that the internal improvement system of our State had its origin and first impetus among and through the early friends of this road? particularly when we remember that Congress was first memorialized for land to aid in the construction of this road.

Having said thus much, which some may consider a personal narrative, rather than a history of the railroad, but which I deemed necessary as a sufficient answer to the charges which have sometimes been made, of having been influenced by personal and inter-

ested motives, I will proceed to lay before you a statement of the affairs of the company.

Previous to the first monday in November, 1853, there had been subscribed to the capital stock of the company the following sums: (the counties and cities issuing bonds payable twenty years after date, and bearing interest at the rate of 6 per cent. per annum for the calls)

City and county subscriptions	$446,400
Individual	184,400
Making an aggregate of	$630,800

Out of this amount there had been collected prior to November 7th, 1853,—

From individuals	$13,697.85
From counties and cities (in bonds)	57,240.00
Making an aggregate in cash and bonds	$70,937.85

Thus it will be seen that the Directors had available means wherewith to carry on the work, to make selection of the lands granted to the company, and to defray the other expenses incidental to such an enterprise, only the sum of $13,697.85—a sum totally inadequate to meet the necessary current expenditures. Mr. Corby, as agent on the part of the company, shortly afterwards effected a loan for the sum of $50,000, on terms most favorable for the interests of the company, thereby enabling them to keep the operation alive to a certain extent.

The disbursements of the company to November 7th, 1853, were as follows—

Engineering department		$42,800 37
Contingencies, &c., &c		16,002 10
Interest account		4,057 98
Right of way for road bed		262 00
Expense of land grant for plats, descriptive lists, &c		857 75
Paid contractors		25,243 05
Making an aggregate of		$89,223 25
Deduct from which—		
Cash loan	$50,000	
Cash from stockholders	13,697 85	$63,697 85
Leaves a deficiency of		$25,525 40

To which may be added the existing indebtedness at that time, as follows—

Due to contractors	$40,354 70	
Due for right of way	13,542 00	

Due engineer's department.....	6,901 53	
Due salaries and contingencies.....	7,175 28	
Loan of borrowed money.....	50,000 00	$117,973 51
Total indebtedness Nov. 7th, 1853.....		$143,498 91

This indebtedness was in excess of all the assets of the company.

Without entering into the details of the efforts made to collect on subscriptions of stock, it may be sufficient to remark that many refused payment, alledging conditions in their subscription. Many had died, or had removed from the country, to California and elsewhere. It may be also remarked that the Directors never authorized any conditions to be made on subscriptions to the capital stock.

The condition of the affairs of the company at this time was such that some aid, other than that which might be expected along the route, must be obtained. The county and city bonds, running twenty years, could not be relied upon, because the character of the bonds would not be sufficiently appreciated in the money market—no provision having been made by taxation or otherwise by the counties issuing them, either to pay the accruing interest or to ensure their ultimate redemption.

The collection from individual stockholders was precarious, and should the whole amount then available from that source be collected, it would be insufficient to pay the liabilities, thus leaving a surviving debt and an impaired credit to impede the further prosecution of the work.

In this condition, the Board entered upon the discharge of their duties for the year 1854. For an account of the work performed, and the payments made thereon, I refer you to the reports of the Chief Engineer, Secretary and Treasurer, herewith submitted.

I have thus briefly stated the condition of our affairs, and the efforts made to keep our enterprise alive. I will now briefly state the course of policy which the Board felt themselves bound to adopt, in order to relieve the company from the embarrassing difficulties which surrounded them, and to secure the completion of the road.

The land which had been granted to the company by the act of Congress, and had been assigned by the State of Missouri to the purposes for which it was donated, had not been selected and confirmed.

The company were entitled to the State credit for the sum of one and a half million dollars, but owing to the cause above related, the county and private subscriptions were so inefficient, and reduced in actual amount below the sum of half a million dollars, (one of the conditions in the act granting to the company the State credit, requiring a bona fide subscription amounting to

$500,000,) that any relief from that source was not practicable. The counties had been importuned for subscriptions of additional stock, and books were again opened, with the hope that the citizens along the line of the road (who were immediately interested in its construction) would come forward and subscribe a sufficient amount to enable the company to avail themselves of the State credit.

Various efforts were made to procure loans of money from eastern capitalists, which failed for reasons not necessary to detail here; but which might have been obtained at the East by a proper co-operation from home. All these sources failing, the Directors fearing the ill-effects of a renewed failure, determined to secure from citizens residing out of the State, if possible, that assistance which could not be obtained from citizens at home.

Accordingly, negotiations were opened with citizens of the cities of Boston and New York, and resulted in procuring a subscription of one million dollars to the capital stock of the company. I am happy to be able to state that, in addition to the high standing and character of these gentlemen, they bring with them an amount of railroad influence that must be of important service to our improvement, both in regard to its connection with lines of road extending eastward from the city of Hannibal, and also to its ultimate extension westward from the city of St. Joseph in the direction of the Pacific.

The facilities thus afforded enabled the company to pay off their existing liabilities, and to prosecute the work.

The accompanying report of the chief engineer, Maj. Bucklin, will show you the amount of labour performed in the construction of the road, and its present and prospective condition. The preliminary survey of the road was necessarily of a very difficult and elaborate character partaking more of the nature of a definite and exact measurement than of ordinary experimental lines. The diversity of local interest, and a laudable desire on the part of the Directory, to ascertain the true compromise between the interests of the company and the best interests of the community, induced the examination of a number of routes, and by the conditions of the contract, the best route was not only to be found but proved to be so by comparative estimates.—Consequently over one thousand miles of experimental lines were examined and instrumentally tested during the progress of the surveys. From an examination of the rpeorts of Maj. Bucklin, and from my own observation, I am fully justified in saying that the field work and computations of the Hannibal and St. Joseph Railroad will both in respect of skill and economy compare favorably with any similar work in the United States, and that he and his associate engineers are eminently entitled to the high degree of praise and credit which have been universally accorded to them by all who are qualified to appreciate their labors. The total cost of engineering up to this date has

been about $330 per mile, and in all probability will not exceed $800 upon the completion of the road; whereas the annual report of railroad corporations for the State of Massachusetts, for 1850, shows an average expenditure of over one thousand dollars per mile on eighteen roads constructed in that State.

Under a system of economy (then necessary for securing co-operation, as well as to the poverty of the treasury,) adopted at an early period of our corporate existence, the Board entrusted the collection of calls on the capital stock, and the delivery of stock certificates to county agents, in each county along the line of the road in which subscriptions had been obtained. Owing to the scattered residence of the subscribers, and their unwillingness to pay, these agents have not been able to make satisfactory reports; and hence the Board cannot report more definitely the precise number of shares now considered as reliable.

But with the accruing stock agreed to be taken by the contractors, (being 10 per cent. of the cost of the whole construction,) the total present amount of reliable shares may be estimated at 19,400, equal to $1,940,000.

From the date of the first legal organization of the company to the present time, it has been my chief effort, in conjunction with the Directors, to press forward the work, and to procure the necessary means without oppressing the country. How far our efforts have been available, and with what skill we have managed the affairs of the company, is not for us to judge.

But we can truly say, that, surrounded by difficulties, our actions misinterpreted and misconstrued, we have never faltered in our exertions to secure the means and place the success of our enterprise beyond the possibility of a doubt; and to realize the hope that the country will enjoy the beneficial results to flow from its construction, at as early a period as anticipated by the warmest friends of the enterprise.

Land Grant.—On the ninth day of February, 1854, the Commissioner of the General Land Office and Secretary of the Interior affixed their official signatures and approval to the list of lands assigned in aid of the construction of the Hannibal and St. Joseph Railroad, amounting to near 600,000 acres, subject to corrections.

Since that time, Mr. E. B. Talcott, the land agent of the company, and one or more of the Directors, have bestowed their constant and most vigilant exertions to the corrections and increase of the quantity of land assigned to the company.

I feel assured, however, that we shall obtain every acre remaining vacant, to which the company is entitled by the allotments of the law, and for which I must refer you to the very intelligent report of E. B. Talcott, Esq., the land agent of the company.

The increased quantity of acres will be derived from lands due by allotment agreed upon with the General Land Office, and by

recoveries from the list of swamp and overflowed lands claimed by the counties, which conflict with the allotment to the company.

The total quantity of land to which we will be entitled by these additional amounts, will exceed 600,000 acres.

I may, however, say that from personal examination of a very large portion of these lands, and from information derived from statistical reports of hemp, tobacco, and other staple products of the soil along the route, and from the vast beds of bituminous coal that exist beneath the soil, I feel assured that, upon the completion of the work, the original estimate of the value of these lands, made by Major Bucklin, the Chief Engineer, in his letter of the 1st of June, 1853, will be fully verified.

The present condition of our enterprise may be stated as follows: The company have discharged all their liabilities, and are now free from debt. A large amount of work has been done, and of a substantial character. About forty miles of the grading is nearly completed, and in readiness for the superstructure. This work embraces some of the heaviest and most costly portions of the road.

The finances of the company are in a sound condition, and the means at their command for future operations are deemed sufficient, until a more favorable state of the money market will admit of more vigorous operations.

The present Board have prepared and executed the necessary mortgage of their lands and other property, to secure the sum of four millions of dollars and the accruing interest; and also bonds bearing seven per cent. interest, to the amount of two millions, are now ready to be put in market at the first prospect of their being negotiated. These bonds are entrusted to an agency of high standing in Boston and New York. Their interest in the work, their reputation as capitalists and gentlemen of high moral character, are a guarantee that the means will be raised, and the work pressed forward with vigor, at as early a day as prudence and a due regard of the rights of stockholders will permit; and that the road will be fully completed within the contract time.

All of which is respectfully submitted.

R. M. STEWART,
President of H. & St. J. R. R.

BUREAU VALLEY RAILROAD.

The first trains through from Chicago passed over this Road on the 7th of November, 1854.

OHIO AND MISSISSIPPI RAILROAD.

On the 22d November, 1854, the Railroad connection between St. Louis and Cairo was established by the Ohio and Mississippi, and Illinois Central Railroads, and on the 27th two hundred and fifty-seven paying passengers were transported to St. Louis by the O. and M. R. R., the Illinois Central having transfered one hundred and forty nine.

On the 28th, a Railroad Celebration was prepared at Salem, sixty-eight miles from St. Louis, on the O. and M. R. R.; and a special train of cars, containing over one hundred guest from St. Louis, invited by the citizens of Marion County, arrived at their prosperous prairie town, just in time to partake of the bountiful entertainment that was spread out before them. A flourish of trumpets was made by a large band of Salem musicians, an eloquent discourse of welcome, on behalf of the people, was delivered by T. F. HOUTZ, Esq., and a response from an overflowing heart was returned by Hon. JOHN HOW, Mayor of St. Louis; when he, with JUDGE HACKNEY of the St. Louis County Court, and the representatives of almost every interest in St. Louis and in Marion County enjoyed a feast where the luxuries of city and country life were profusely mingled and social congratulations mutually exchanged.

Towards evening the St. Louisans returned home—happy and safe—thanks to the citizens of Marion County and to MAJOR R. WALKER, the accomplished Superintendant of the Road.

Statistics of the United States.

We are indebted to J. D. B. De Bow, Superintendent of the United States Census, for advanced sheets of the Census Report, now in course of publication; from which we copy the following tables and observations.

In a country distinguished by its progress in every department of industry, by its unparalleled increase of population, and by the continual advance of settlement and the arts of civilization into regions heretofore uninhabited, a knowledge of its statistics is not only necessary to the statesman, but can not be otherwise than useful to those engaged in every department of industry. We regard Mr. De Bow as being eminently capable of doing full justice to the subject in hand, and trust that the complete work will be given to the country without delay.

COLONIAL POPULATION.

COLONIES.	COLONIAL POPULATION.			Increase per cent. first 18 years.	Increase per ct. per annum	Increase per cent. 2d period, 26 years.	Increase per ct. p. annum.	Increase per cent. in 74 years.	Increase per cent per ann. in 74 years.
	1701.	1749.	1775.						
Connecticut	30,000	100,000	262,000	233.33	4.65	162.00	6.23	773.33	10.45
Delaware	....	Incl.in Pa.	37,000						
Georgia	....	6,000	27,000	....	.....	350.00	13.46		
Maryland	25,000	85,000	174,000	240.00	5.00	104.71	4.00	596.00	8.05
Massachusetts	70,000	220,000	352,000	214.29	4.46	60.00	2.31	402.86	5.44
New Hampshire	10,000	30,000	102,000	200 00	4.17	240.00	9.23	920.00	12 43
New Jersey	15,000	60,000	138.000	300.00	6.25	130.00	5 00	820.00	11.08
New York	30,000	100,000	238,000	233.33	4 86	138 00	5.31	693.33	9.37
North Carolina	5,000	45,000	181,000	800.00	16.67	302 22	11.62	3,520.00	47.57
Pennsylvania	20,000	250,000	341,000	1,150.00	23.96	36.40	1.40	1,605.00	21 69
Rhode Island	10,000	33,000	58,000	250.00	5.21	65.71	2.53	480.00	6.49
South Corolina	7,000	30,000	93,000	328 57	6.84	210.00	8.08	1,228.57	16.60
Virginia	40,000	85,000	300,000	112.50	2.34	252.94	9.73	650.00	8.78
Whites	.....	.....	2,303,000						
Slaves, estimated	....	....	500,000						
All classes	262,000	1,046,000	2,803,000	299.24	6.23	167.97	6.46	969.85	13.11

At the beginning of the revolution the Southern colonies had therefore 812,000 white inhabitants, and the Northern 1,491,000. Connecticut was the fourth State in rank. Massachusetts and Pennsylvania were each a third larger than New York, which was even excelled by Connecticut.

Upon the adoption of the Federal Government in 1789, framed upon the basis of popular representation, more precise and accurate knowledge in regard to the numbers of the people became necessary, and such knowledge is accordingly provided for in the Second Section of the first Article of the Constitution.*

"Representatives and taxation shall be apportioned among the several States which may be included within this Union, according to

* See Introductory Chapter.

their representative numbers, which shall be determined by adding to the whole number of free persons (including those bound to service for a term of years and excluding Indians not taxed,) three-fifths of all other persons," (meaning slaves.)

POPULATION OF THE UNITED STATES.

There have been seven enumerations of the inhabitants of the United States, the periods and aggregate results of which are as follows:

	Number.
Census of 1790	3,929,827
" " 1800	5,305,925
" " 1810	7,239,814
" " 1820	9,638,131
" " 1830	12,866,020
" " 1840	17,069,453
" " 1850	23,191,876

At the end of 1854 the total population of the United States, upon the supposition that its average ratio of increase has been maintained, or nearly so, may be stated in round numbers at **26,300,000.**

The present population of the Union may be said to consist of, *first*—the number who were in the country on the formation of the government in 1789, and their descendants; *second*, of those who have come into the country since that period by immigration, and their descendants, [of this class much will be said under the head of "Nativity;"] *third*, of those who have been brought in by annexation, as in Louisiana, Florida, New Mexico, &c., and their descendants. It is sufficient to say of the last class, that Louisiana, when purchased, had 77,000 inhabitants, including 53,000 slaves; Florida about 10,000; California and New Mexico, about 60,000; and that Texas and Oregon only brought back into the Union citizens who had emigrated thither but a short time before. The number of Indians [taxed] domesticated and absorbed in the population, cannot be ascertained. The colonial population was swelled, in 1765, by the extension of the boundary to the Mississippi, and the introduction of 2,000 French residents of the territory incorporated. [Bancroft.*]

* Dr. Dowler, of New Orleans, a profound vital statistician, in a pamphlet upon the influence of republican government upon the extension of population, after showing an extraordinary decline in most of the Cities, States, and Towns of South and Central America and Mexico, remarks that "in three centuries the entire Caucasian race in both Americas south of the United States, has not equalled numerically that portion of the Union lying west of the Alleghany mountains, settled by the present generation, amid the conflicts of prolonged savage wars with the bravest and most sanguinary nations known in all history."

AGGREGATE POPULATION AND DENSITY

STATES	POPU		
	1790.	1800.	1810.
Alabama			
Arkansas			
California			
Columbia, District of		14,093	24,023
Connecticut	238,141	251,002	262,042
Delaware	59,096	64,273	72,674
Florida			
Georgia	82,548	162,101	252,433
Illinois			12,282
Indiana		4,875	24,520
Iowa			
Kentucky	73,077	220,955	406,511
Louisiana			76,556
Maine	96,540	151,719	228,705
Maryland	319,728	341,548	380,546
Massachusetts	378,717	423,245	472,040
Michigan			4,762
Mississippi		8,850	40,352
Missouri			20,845
New Hampshire	141,899	183,762	214,360
New Jersey	184,139	211,949	245,555
New York	340,120	586,75	959,049
North Carolina	393,751	478,10	555,500
Ohio		45,36	230,760
Pennsylvania	434 373	602.361	810,091
Rhode Island	69,110	69,122	77,031
South Carolina	249,073	345,591	415,115
Tennessee	35,791	105,602	26.,727
Texas			
Vermont	85,416	154.465	217,713
Virginia	748,308	880,200	974,622
Wisconsin			
Territories.			
Minnesota			
New Mexico			
Oregon			
Utah			
		5,305,937 *a* Less 12	
Total	3,929,827	5,305,925	7,239,814

a Deducted to make the totals published incorrectly in those years. *b* Persons on board vessels of war in the United States naval service. *c* A later statement from the State Department for the same year, gave Alabama a total of 144,317.

* By the State Census of Missouri, in 1848, there were 510,435 whites; 1,779 free colored; 76,757 slaves; total, 588,971. By the census of 1852, there were 623,319 whites; 2,526 free colored; and 87,172 slaves; total, 713,017. By the State Census of Louisiana there were, in 1847, 196,430 whites; free colored 19,842; slaves, 211,483, total, 427,755, and in 1852, 301,103 whites; 23,820 free colored; 261,692 slaves; total 485,312. By the Census of New York, in 1845, there were 2,560,149 whites, and 44,346 colored; total, 2,604,495. By the Alabama State Census of 1850, there were 434,392 whites, 2,491 free colored, and 340,048 slaves; total, 776,931. By the Massachusetts State Census of 1850, the total population was 973,715. The population of California, according to the

OF THE STATES AND TERRITORIES.*

LATION.				DENSITY.	
1820.	1830.	1840.	1850.	1840.	1850.
c 127,901	309,527	590,756	771,623	11.65	15.21
14,273	30,388	97,574	209,897	1.87	4.02
....	....	....	92,597	....	.59
33,039	39,834	43,712	51,687	437.12	861 45
275,202	297,675	309,978	370 792	66 32	79.33
72,749	76,748	78,085	91,532	36.82	43.18
....	34,730	54,477	87,445	0 92	1.48
340,987	516,823	691,392	906,185	11.93	15.62
55,211	157,445	476,183	851,470	8.59	15 37
147,178	343,031	685,566	988,416	20.28	29.24
....	....	43,112	192,214	0.85	3.78
554,317	687,917	779,828	982,405	20.70	26.07
153,407	215,739	352,411	517,762	8.54	12.55
298,335	399.455	501.793	583,169	15.80	18.36
407,350	447,040	470,019	583.034	42.25	52.41
523,287	610,408	737,699	994.514	94 58	127.50
8,896	31,639	212,267	397,654	3.77	7.07
75,448	136,621	375,651	606,526	7.97	12.86
66,586	140,455	383,702	682,044	5.69	10.12
244,161	269,328	284,574	317.976	30.67	34.26
277,575	320.823	373,306	489.555	44.87	58.84
1,372,812	1,918 608	2,428,921	3,097,394	51.68	65.90
638,829	737,987	753,419	869 039	14.86	17.14
581,434	937,903	1,519,467	1,980,329	38.02	49.55
1,049,458	1,348,233	1,724,033	2,311,786	37.48	50.26
83,059	97,199	108,830	147,545	83.33	112.97
502,741	581,185	594,398	668,507	20 23	22.75
422,813	681,904	829,310	1,002.717	18.18	21.99
....	....	....	212,592	....	0.89
235,764	280,652	291,948	314,120	28.59	30.76
1,065,379	1,211,405	1,239,797	1,421.661	20.21	23.17
....	....	30,945	305,391	0.57	5.66
....	....	....	6,077	....	0.04
....	....	....	61,547	....	0.30
....	....	....	13,294	....	0.07
....	....	....	11,380	....	0.04
9,638,191 *a* Less 60	*b* 5,318	*b* 6,100			
9,638,131	12,866,020	17,069,453	23,191,876	9.55	7.90

State Census of 1852, (ordered to be made part of the Census by Congress) was 224,435. The population of Wisconsin in 1836 was 11,683; in 1838, 18,130; in 1842, 44,478; in 1847, 210,546. The white population of South Carolina, by the State Census of 1849, was 280,385.

Much interesting detail, not now published, could be gleaned from the national Census, such as should receive attention at future periods. For example, a hasty view of the returns from three or four States shows: one white person in Cole county, Missouri, pauper, and one in Schuyler county, both females, aged 110 each. In Indiana, one female, black, in Hendricks county, born in Virginia, and a female, black, in Perry county, each aged 113; and another in Wayne county, also born in Virginia, aged 104. In Colleton District, S. C., a female, black, aged 111. In Lincoln county, Geo., a blind male white, aged 108; and in Wilkinson county, same State, a female white, aged 105. In the parish of Lafayette, La., one female black slave aged 130, not infirm. In North Carolina

It appears from table XII, that although the density of population in all of the States and Territories which were organized in 1840, has increased since that time, yet in consequence of the introduction of new territory, the density of population in the Union at large, has declined from 9.55 persons to a square mile, which it was in 1840 to 7.90 in 1850. A similar decline, and for the same reason, is noticed in 1810 and 1820, from the density of 1800. Although the population of the United States has increased six fold since 1790, the number of persons to a square mile of its territory has not doubled.

Density of Population to square mile in the U. S.

1790.	1800.	1810.	1820.	1830.	1840.	1850.
4.79	6.47	4.21	5.39	7.20	9.55	7.90

The population of the United States on the first of June, 1850, was twenty-three millions one hundred and ninety-one thousand eight hundred and seventy-six persons, of whom, as will be hereafter seen, nineteen millions five hundred and fifty-three thousand and sixty-eight were WHITE, four hundred and thirty-four thousand four hundred and ninety-five were FREE COLORED, and three millions two hundred and four thousand three hundred and thirteen were SLAVES. If to this number be added those who possibly escaped the enumerators from being temporarily abroad or travelling in the country at the time and were not reported, [those on their way to California were considered as already there,] as belonging to any household, or who were not sleeping in any dwelling house or out house visited—the total number may be safely set down at twenty-three millions two hundred and fifty thousand persons.*

three male whites aged respectively 108, 110 and 111; two white females aged each 106; one, 108; one, 114; one mulatto male, 106; one mulatto male, 120; one black male, 109; one female black, 115; two black females, 110; one black female 111; one mulatto female, 100; one Indian male, 125; one Indian female, 140. In Fountain county, Indiana, there is a family, four members of which are deaf and dumb; in Greene county, same State, another with five; in Howard county, twins deaf and dumb. In Marshall county, Indiana, there is a family with three boys, now thirteen years old, born at one birth; one of whom is blind. [The Prusssian Statistics show in 23 years, 1,689 cases of *three* children at a birth, and 36 cases of *four* children; the males always preponderating.] Four out of five in a family in Weymouth, Mass., are deaf and dumb. Three children in one family in North Brookfield, are deaf and dumb. In Boston, Mass., there is a female who was a mother at eleven years of age, and in 1850 was 25 years old, and had five children living.

* The assistant Marshals were ordered to visit every description of house, to enumerate persons temporarily absent, to include those alive on the first of June, although dead at the time of their visit, and to omit all the living who were born since the first of June. Thus sailors abroad and travellers belonging to the country, were to be included, and the assistants were required to enter from the registers at seaports, Mariners not already enumerated in families. Persons on

There were at that period within the jurisdiction of the Union, (see table hereafter,) *four hundred thousand seven hundred and sixty-four* unrepresented and untaxed INDIANS, swelling the aggregate population under the jurisdiction of the republic in 1850, to *twenty-three millions six hundred and fifty thousand seven hundred and sixty-four persons.*

Population of the several Geographical Divisions of the Union.

The different Slopes, &c.	1790.	1800.	1810.	1820.	1830.	1840.	1850.	Per ct.
Pacific Slope - - - - -	. . .	. . .	. . .	. . .	. . .	. . .	117,271	0.5
Mississippi Valley - - - -	205,280	582,619	1,337,946	2,419,369	3,794,477	5,983,707	8,641,754	37.2
Atlantic slope - - - - -	3,708,116	4,687,725	5,824,708	7,013,154	8,633,632	10,097,785	12,729,859	54.8
Gulf, (East of Mississippi)	16,431	35,581	75,582	201,586	426,512	964,448	1,414,598	6.1
Gulf, (West of Mississippi)	. . .	. . .	1,578	4,022	11,399	23,513	288,394	1.2
Gulf and Mississippi Valley	221,711	618,200	1,415,106	2,624,977	4,232,388	6,971,668	10,344,746	44.6

board every description of vessel were to be taken, unless temporarily or accidentally in the country, and not belonging to it.

The English Census of 1851 gives a total of 82,921 persons not sleeping in houses at the time the census was taken, to wit, 12,924 sleep in barges, 9,972 in barns, 8,277 in tents and open air, 8,575 in vesssels in port engaged in inland navigation, 43,173 in sea-going vessels in port. The total no. of sailors in the Am. merchant marine may be estimated in 1853, at about 112,500. In the United States navy, the number of seamen at the period of the census of 1850, was 7,500, of whom about 6,638 were then out of the country, and of the total number, about 1,360 were of foreign birth, [from a statement prepared for this office by the Secretary of the Navy], a similar report from the War Department shows the number of the army, 1st June 1850, officers and men, 10,540, two-thirds of the latter or about 7,026 being foreign born. The number of men in the army, navy, &c., of Great Britain in 1853, was 210,474. The number of merchant seamen at home and abroad, 124,744, total, 335,218; of the 225,916 abroad, 13,722 were of colonial or foreign birth. The number of British subjects other than mariners in foreign states, was ascertained in 1851 through the State Department to be 33,775, exclusively of those in other places not ascertained, to wit, in Greece, 1,068, in Russia, 2,783, Sardinia, 1,068, Turkey, 611, Two Sicilies, 1,414, China, 649, Persia, 33, Alexandria, 155, Cairo, 85, Tripoli, 23, Belgium, 3,828, France, 20,357, Saxony, 321, Turkey in Asia, 624, Mexico, 755, &c. It would be well for the government of the United States in a similar manner through its consuls and ministers, to obtain this information in regard to its citizens at each census or oftener. At present the number of

By the above it appears that, whilst the Atlantic States have increased more than three-fold since 1790, the Gulf States, which had then scarcely any existence, have now a population nearly one half as great as the population of all the States together at that time. The great Interior Valley of the Mississippi has, in sixty years advanced more than forty-fold; the increase being six-fold in the first twenty years and nearly seven-fold in the following forty years. The Gulf Region and the Mississippi Valley together, in 1850, have eleven-twentieths of the whole population of the Union. The statistics are calculated upon a close inspection of the maps, including, where necessary, counties only, or fractions of counties, so as to correspond with the divisions indicated by the Topographical Bureau. They will therefore be found to correspond very nearly, if not altogether, with the facts.

Population and Density of Geographical and other Divisions.

Divisions.	Population.	Density.
The States, exclusively of Territories.....	23,099,578	15.77
do. excl. of Texas and California.	22,794,389	21.29
Texas and California.....	305,189	.77
The Territories.....	92,298	.06
The Non slaveholding States.....	13,434,922	21.91
The Slaveholding States.....	9,664,656	11.35
New England States.....	2,728,116	41.94
Middle States.....	6,624,988	57.79
Southern States.....	3,952,837	15.27
South Western States.....	3,321,117	7.00
North West.....	6,379,923	16.13
North of 36.30.....	13,626,995	6.91
South of 36.30.....	9,564,881	9.90
East of the Mississippi.....	21,393,954	24.71
West of the Mississippi.....	1,797,922	.87
Pacific slope.....	117,271	.15
Mississippi slope.....	8,641,754	6.98
Atlantic slope.....	12,729,859	19.98

citizens residing abroad cannot be conjectured unless from the number of native passengers annually returning to the country. It is said that 700 to 1000 are now residents of Paris. the total number abroad may be supposed at least as large as that of foreigners in the country who are merely passing through it without the intention of remaining, and no doubt it is many times larger. Such foreigners, however, under the instructions to Marshalls, would not be enumerated in our schedules. The whole number of foreigners temporarily in Great Britain is not known, though the annual number entering the country did not exceed before 1850, an average of 18,000, swelled in 1851, in consequence of the Great Fair, to 65,233.

The Middle States are therefore the densest portion of the Union, owing, in some degree, to the very large cities existing there. The NewEngland States come next in order; then the North-west; then the South, and lastly the South-west. The non-slaveholding States are twice as dense as the slaveholding States. The States, taken together, have a density of about sixteen to the square mile. Excluding Texas and California, their density is over twenty-one to the square mile. The Territories have one inhabitant only to every sixteen square miles. Texas and California together have less than one to a square mile. Whilst nearly twenty-five persons inhabit a square mile in the region east of the Mississippi, and nearly twenty persons in the Atlantic slope, in the Mississippi valley there are only about seven persons to the square mile; west of the Mississippi, less than one person to the square mile; on the Pacific slope, one person to every six square miles! With the density of the Mississippi valley the United States would have had but 21,000,000 inhabitants; with the density of the Southern States, the number would be nearly 45,000,000; with the density of New England, 123,000,000; and with the density of the Middle States, 170,000,000.

The density of Switzerland approximates nearer than that of any of the countries named in the note to the density of Massachusetts, although still at a large remove. Belgium, the highest on the list, is more than tree times as dense as Massachusetts, and nearly ten times as dense as New England. Great Britain is denser than France; and Holland denser than either, having twice the density of Massachusetts. Brazil, Mexico and Canada are much less dense than the United States. With the density of Sweden and Norway, the least populous of any European States, the United States would embrace forty-five millions of inhabitants; with the density of Russia, over eighty millions; with that of Spain, two hundred millions; of France, five hundred millions; of Britain, six hundred and sixty millions; of Belgium eleven hundred and fifty millions. Twelve times the number of persons now live to the east of the Mississippi as live to the west of it. The non-slaveholding have a third greater population than the slaveholding States. The South has more than the South-west. The Middle States have as much as the Southern, and New England or South-western together, and a little more than the North-west.

Population and number of inhabitants to the square mile of various American and European Countries.

Countries.	Population.	Density.
United States	23,191,876	7.90
Canada	1,842,265	5.31
Mexico	7,661,919	7.37
Central America	2,049,950	10.07
Brazil	6,065,000	2.19
Peru	2,106,492	3,63
Russia in Europe	60,315,350	28.44
Austria	36,514,466	141.88
France	35,783,170	172.74
England	16,921,888	332.00
Great Britain and Ireland	27,475,271	525.19
Prussia	16,331,187	151.32
Spain	14,216,219	78.03
Turkey in Europe	15,500,000	73.60
Sweden and Norway	4,645,007	15.83
Belgium	4,426,202	388.60
Portugal	3,473,758	95.14
Holland	3,267,638	259.31
Denmark	2,296,597	101.92
Switzerland	2,392,740	160.05
Greece	998,266	55.70

JOURNAL OF INDUSTRY.

Remission of duty on Railroad Iron.

We are much pleaced to find an advocate of American industry in ZERAH COLBURN, the talented Editor of the *Railroad Advocate*, a weekly paper recently established in the City of New York. The arguments and illustrations contained in the following article, which we copy from the third number of the Railroad Advocate, address themselves to the understanding of every dractical mind, and we commend them to the consideration of all who feel an interest in the prosperity of the country. We regret that the paper on this subject in the second number of the "Advocate" alluded

to in the following article has not come to hand, as we should have been pleased to present the whole of his argument in one view.(*Ed.*

This measure, based upon arguments examined in our last issue, involves the entire principle of the national protection of industry. A partial or specefic remission of duty may be as well granted to one kind of importation as another, where both compete to an equal extent with domestic production. This brings up the question of the natural employments in which different nations should engage. If America cannot produce iron as cheaply as England, but can raise breadstuffs cheaper, any advocate of free-trade would say that each country should devote itself to what it can do best, and thus promote a large international trade. But it should be said, in reply, that it is not the developed existance of an industrial element, but the latent capacity of sustaining it, that governs the proper direction of national effort. On the same principle we might ask "what is the use of teaching a boy a trade?" As a blacksmith, old Mr. Bellows can work better and cheaper, and as a carpenter, Mr. Foreplane can build a house upon the products which the boy could raise *in the field.* But it may be that the boy, after a proper apprenticeship, can build houses or forge horse-shoes better and cheaper than either of the old artizans upon whom the community had before depended. But if the boy's support must depend in the meantime upon his ability to compete with skilful hands, he might be compelled to quit the trade before it was learned. He must evidently be supported until able to support himself. It may be, that in this illustration, an argument for industrial protection can be discovered.

At the present moment, the *variety* of our social and industrial pursuits, is one of the chief elements of the success of our Railroads. Take away the manufacturing element, for instance--what a sacrifice of capital; what a decay of industrial communities; what a crowded distressed condition of agricultural employment, and what a vast drain of the available means of the country would result.

At the present moment, it is but a *portion* of the great manufacturing interest which the advocates of remission propose to sacrifice. It is a single one of many branches of industry, *all* of which might be attacked with equal propriety. The rail-rolling interest now employs a direct investment of nearly $12,000,000, besides sustaining indirectly other large occupations of capital. It is a business which has heretofore been the football of legislation and of commercial fluctuations. The question of *any* protection, or of its *amount*, has been a continual source of ferment, and has kept capital out of the business, and kept up the cost of domestic production. It is the hazard of the iron business, as it has existed, that has made us so largely dependent on importation, and that now puts the price of iron so high, to cover the *risks* of

manufacturing enterprise. But for the great demand for rails, the discovery of gold in Australia, and the emigration of English iron workmen, all of which operated to put up the price and increase an *ad valorem* duty in proportion, the iron business would be now at as low a stage as ever. It is just now when, from these circumstances, the business pays a fair profit, and domestic enterprise is gaining confidence, that a new shock is proposed.

How soon will it be before remission is applied for upon bar iron, chairs, spikes, boiler plate, engine and car axles, tires and machinery forgings? Railroads make the market of all, and are equally interested in importing all at the lowest price. How soon with such a precedent, would it be before a retroactive and prospective remission of duties would be asked upon all importations competing with home production?

The present duty now forms 23 per cent. of the whole price of iron. If this was taken away, and with the continuance of present foreign prices, no *basis* of profit would be left to American producers. The *fear* that a diminished demand would make the foreign price even lower, would discourage all domestic capital from pursuing the business. But should the present demand continue, the production being thrown into the hands of foreign makers, the price would rise until our Railroads would pay as much as now. The result of the measure would be that a most important branch of domestic industry would be destroyed; Railroad Companies would pay as much for iron as would sustain a fair duty, and that instead of the present duty being retained in the hands of our government, it would go to foreign iron-masters. By stopping the production of wealth at home, in the shape of iron, there would be less surplus for building Railroads. If the building of Railroads was continued, a greater proportion of credit would be required, and more *bonds* would go to England to be *discounted* at higher shaves.

Such are the tendencies of this measure. Now, who are its advocates?

Foreign iron-makers hold a large interest in many of our Railroads, from having supplied us with rails, and having discounted our Rrailroad bonds as payment. These men, therefore, feel that they have a *right* in our market. They have agents in this country to discount bonds, and procure contracts for rails. Both of these branches of business should increase, if relieved from all duty. It is those of our countrymen who have been in a position to compromise most with these men, that are now advocating repeal. Men who, upon their own account, and upon that of our Railroad Companies, have incurred obligations with foreigners, are now doing the work of their creditors. The organs which have become notorious from playing into the hands of this class of capitalists, are of course assisting in the work. The power of this influence to reverse the effort of former public servants, once com-

mitted to protection;—to fuddle the perceptions of organs pretending to independence and nationality,—and the hopes of this interest to procure legislation by private and disreputable means,—all attest the power of foreign capital, and the degree of subjugation to which our Railroads and our public sentiment have been brought.

Circumstances have lately transpired which will warrant our speaking again upon this subject.

Grape growing in California.

We have contemplated California as a gold region attracting to its shores the adventurous and mammon-loving spirits from every clime, and sending forth its glittering dust to stimulate industry, and replenish the channels of commerce; again, we have regarded it as an agricultural region redundant in the production of the elements of human subsistance, but, to our view, its natural meadows, its fruits and vineyards constitute the most pleasing aspect presented by that land of marvels.

Ancient California has been long celebrated for its fruitful vines and delicious grapes, and the picture impressed upon our mind by the accounts of travelers, though somewhat marred by recent events, is still bright and pleasing to memory. The rich meadows enlivened by herds uncounted by their owners, the vineyard with its clustering grapes, the mission and the ranch, the herdsman and wine dresser all rejoicing in a clime of exceeding brightness, formed a picture far more pleasing to our imagination than that of modern California with all its gold, its agriculture and its commerce. Hence, it is gratifying to observe that grape growing, a branch of industry which constituted an important item in the economy of ancient California, is likely to become one of the leading pursuits of its present and future inhabitants.

The production of the cerials and of esculent roots already exceed the demand for those articles on the wertern coast: they will not bear transportation to the eastern States and pay remunerating prices to producers: wine and raisins will bear transportation to the most distant markets. And we are persuaded that were the people of California to direct their attention to the cultivation of

the grape, it would not be long before that region would become as famous for its wines as it now is on account of its gold.

According to the census returns, California produced 58,055 gallons of wine in 1849, being more than one-fourth part of the entire quantity produced in the United States; and we infer from the following paragraphs, which we copy from the California Chronicle, that a new impetus has been given to grape growing since that period.

In connection with a view of the improvements going on in Los Angeles county, the writer says:

"It is becoming a garden, a vineyard, and the day is not far distant when it will be to all the western coast of America, and the people still further West, what the most choice spots in Europe have long been to the civilized world. It will supply us with champagne equal to any produced in the old country, and certainly superior to the compounds manufactured in the distilleries of the United States. One gentleman, Mr. B. D. Wilson, has employed one of the best manufacturers of champagne who could be found in Europe. He has many thousand vines in high state of cultivation, has built wine-cellars and all the other necessaries for the manufacture of the best articles, and his whole crop will be turned into champagne.

Don Luis Vignes, another old resident of the country, has one hundred thousand vines, and employs at certain seasons of the year perhaps forty hands, to attend to his vineyards. A large portion of his grapes is turned into wine—other portions find their way to this market. His entire income, we are informed, he expends in the improvement of his grounds. There are many others who are devoting their attention to the same pursuit. We have tasted wine in Los Angeles, years ago, equal to almost any produced from the vineyards of France, and when the preparations for producing it shall have been generally completed and perfected, there will be little need for the juice brought over the ocean, or the concoctions now in the market.

For one wishing a life of pleasant ease, amid flowers and sunshine, fine air and beautiful scenery, in the midst of gardens such as Flora might delight to visit, and among vineyards which would bring moisture into the dust of Anacreon, and make the face of Horace look like an illuminated goblet of Teian—for such, Los Angeles is the spot. We can scarce conceive of a more delightful place, a more cheerful employment. Then there is all the fullness of country life all about one. All the comforts of the farm, fresh butter, eggs, milk, bread, vegetables, exercise, equestrian delights, open air and strong lungs, health, freedom, ever at command, and never wearying. Can anything seem more delightful?

It is with pleasure that we turn back to a contemplation of that delightful section. And it is with no little pleasure that we hear of the rapid strides it is making in healthful progress. With the county goes the city, aptly named "of the Angels." Real estate has doubled in value there within a year. Men have grown rich through their foresight in this respect, having purchased when property was very low. As with real estate, so with other species and sources of wealth. That section has been comparatively asleep, but it is awake now, and growing up into an active, rich and delightful agricultural and vine growing valley, fit for a dwelling for the best of princes—*a freeman.*"

NEW METALS FOR MACHINERY.

Mr. J. P. Kingston, Lewisham-road, Kent, has patented the combination of tin, copper, and mercury, and using the same as bearings, or linings of bearings, and for packings for machinery. In carrying out this invention, the patentee melts (say) 9 lbs. of copper, and adds thereto 24 lbs. of tin. This combination he allows to cool, and again melts it, and then adds 108 lbs. of tin; and when the tin is melted, he adds 9 lbs. of mercury, and then allows the whole to cool. The patentee remarks, that he does not confine himself to the precise quantities of the above metals given, but believes them to produce the best compound for the purposes of the invention. The compound metal, thus produced, is to be made into bearings, if for light machinery, by forming it, when re-melted, into moulds of the proper forms; and when making packings of machinery, the melted metal is run into the spaces to be packed, as has heretofore been done with other soft metal, taking care that the surfaces to which the packing is not desired to adhere are covered with smoke or other proper material, as is well understood. When lining bearings, the surfaces of the boxes or bearings (where the lining is to adhere) are first to be tinned, and the melted metal is then run; cores and moulds being used when necessary, as has heretofore been practised. The patentee claims the combining mercury with tin and copper in the manufacture of bearings and packings for machinery.

American Railway Times.

TANNING COTTON AND LINEN.

English and French fishermen have long been in the habit of tanning their sails, etc., in bark liquors, in order to render them more durable. Milliet states that pieces of linen, treated for 72 hours with an oak bark liquor, at 15°, and stretched on frames, remained unaltered in a damp cellar for ten years, while untanned linen, in the same place and for the same time, had entirely rotted. It was further shown that linne, which had begun to moulder, might be preserved from futher change by being tanned. It seems to be only necessary that the articles should be kept two or three days in warm solution of tannin. Awnings may be treated in this manner with either oak bark, or sumac—both will answer. This will afford a useful hint to our sailcloth manufacturers.

Railroad Record.

MEZQUITE GUM.

OFFICE SUPERINTENDENT INDIAN AFFAIRS }
Fort Smith, Ark., Oct. 10, 1854. }

Sir,—I have the honor to bring to your notice a recent discovery of a valuable substitute for gum arabic, discovered by Dr. G. G. Shumard, Physician and Geologist to the late Expedition, commanded by Capt. Marcy, U. S. A., to the regions of the source of the Big Wachita and Brazos Rivers in the north of Texas.

The enclosed specimens done up in a tin box—3 or 4 oz—of gum mezquite, being for sample, and sent for your inspection and use. The remarkable similarity of taste, appearance, and mucilaginous qualities of this gum to that of gum arabic, induced Dr. Shumard to make some experiments, the result of which proving satisfactory, he caused some 20 lb to be gathered, and was brought home on his return some ten days past.

Upon diluting one ounce of this gum in two ounces of cold water I had a fine glutinous paste, which I have used in sealing envelopes and other packages. I have also caused it to be mixed with starch in the application to linen, and in both instances have no hesitation in saying that it is equal to the article of which it must soon become a popular substitute. In this first form the Indian Department, you will perceive, is permitted the privilege of its first official use. It will be seen that its adhesion or glutinous qualities cannot be excelled, as I have sealed up the box with it and will use it on the outward envelope. Should this gum prove as valuable in form of mucilaginous preparations for the sick, as in the two cases to which I have subjected it, and should it command one-half of the present prices paid for gum arabic, the gathering it would afford employment for, and support of thousands of the wild Indians on the Plains, and with encouragement it will become a valuable article of traffic on the western frontier.

The difference in shade ond color of the various specimens will be accounted for in Dr. Shumard's note, herewith enclosed, and to which I beg leave to refer you for further particulars.

Very respectfully your obedient servant,

THOS. S. DREW, Supt., &c.

Hon. George W. Manypenny,
Commissioner Indian Affairs.

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Attorneys.

PHILIP PIPKIN, Jr. Attorney at Law, Hillsboro', Mo.

F. HEREFORD, Attorney at Law, Independence, Mo. Office over Thomas & Todd's store.

Refer to Messrs. Thomas & Todd, Smart & Hughes, Coleman & Dallam, Independence, Mo.; Hon. Wm. Scott, Hon. Thos. L. Price, George W. Hough, Jefferson City, Mo.; Tutt & Watson, M. Tarver, Esq., H. Cobb, Esq., St. Louis, Mo.

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March 1853.

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"	3 00, P. M.,	"	4 45, P. M.,
"	5 00, P. M.,	"	7 00, P. M.,

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Leave at	6 00, A. M.,	Reach at	9 00, A. M.,
"	11 15, A. M.,	"	1 00, P. M.,
"	4 45, P. M.,	"	8 30, P. M.

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Leave at	8 45, A. M.,	Reach at	8 30, A. M.,
"	12 45, P. M.,	"	2 30, P. M.,
"	5 15, P. M.,	"	7 00, P. M.

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Omnibusses leave the Planters' House, on Fourth street, half an hour in advance of every train, and run regularly in connection to and from all the trains.

Passengers are particularly requested to purchase tickets of the Agents, at each end of the line, before taking seats in the Cars. Extra charge for tickets purchased in the cars.

U. S. MAIL.—Sanger & Co. will run a daily line of four horse Post Coaches as follows: Leaving Franklin in connection with the 8 00 A. M. train from St. Louis. They will run coaches to Jefferson City, and thence westward and south-westward. They will also run a line of four horse Post Coaches, via Union, to Washington. Time to Washington, from St. Louis, 7 hours; to Jefferson City, 30 hours.

Tickets to be procured of Sanger & Co., at their office, under the Planters' House, 4th st.

JAMES M. WARD, Ass't Sup't.

Office P. R. R. Depot, Fourteenth street, St. Louis, April 1, 1854.